Aquatic Enhancement
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Jimmerson Lake Aquatic Vegetation Management Plan Update, Steuben County, Indiana 2006

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Table of Contents

List of Tables

Executive Summary

Jimmerson Lake is a 346 acre oligotrophic glacial lake in Steuben County Indiana. It has a relatively large watershed of 52 square miles comprised largely of wooded, developed and agricultural lands. The lake is ringed by a mix of riparian marshland and uplands. Nearly all lakeside uplands are developed with homes and cottages. The lakes islands and riparian areas contain several high quality wetlands. Jimmerson Lake has a unique and diverse aquatic flora with at least 21 species of submersed aquatic plants, two rare species and one threatened species. A luxuriant native plant community causes problems for Jimmerson Lake residents by impeding navigation, swimming, and other recreational activities along lake frontages and a number of excavated channels. While a large variety of native plant species cause problems for lake residents, the native plants Variable watermilfoil *Myriophyllum heterophyllum,* and Vallisneria *Vallisneria americana* are especially troublesome. Variable watermilfoil impedes boat traffic and swimming in some areas by forming thick growths that reach the surface. This also results in large amounts of free drifting prop-cut Variable watermilfoil plants in the lake. These can build up on the lake's windward shoreline subjecting residents in those areas to an unsightly mess as the plants accumulate and decompose. The dominance, invasiveness, and density of this plant's growth in Jimmerson Lake may have been artificially enhanced by this condition. Fragments cut free of their parent plant by powerboats have probably hastened the spread of this plant over the years. In addition, Eurasian watermilfoil *Myriophyllum spicatum*, a highly invasive non-native species of aquatic plant causes problems in several areas by forming thick growths that impede recreation and displace the lake's native plant species. The excessive growth of Eurasian milfoil has caused ecological and recreational-use problems in channels, shoreline areas, and some offshore areas of the lake totaling approximately 17 acres. Curlyleaf pondweed, *Potamogeton crispus,* also a non-native invasive plant occasionally causes significant problems in approximately five acres of Jimmerson Lake. To help address this issue the *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006) has been developed though cost-share funding provided by the Indiana Department of Natural Resources Lake and River Enhancement Program (LARE) and the Jimmerson Lake Association. The purpose of the plan is to provide guidance to the Jimmerson Lake Association and the Indiana Department of Natural Resources for managing the lakes plant community to protect the ecological integrity and recreational and aesthetic value of the lake. The plan contains the following primary goals:

Goal 1. • Maintain a stable, diverse aquatic plant community that supports a good balance of predator and prey fish and wildlife species, good water quality and is resistant to minor habitat disturbances and invasive species.

Goal 2. • Direct efforts to preventing and/or controlling the negative impacts of aquatic invasive species.

Goal 3. • Provide reasonable public recreational access while minimizing the negative impacts on plant, fish, and wildlife resources.

This update summarizes plant management activities and the plant community and lake-user response that took place in 2006 under the plan, and provides a proposed course for future management that is consistent with the original plan goals. Tier I Aquatic Plant Data and milfoil location data were collected on Jimmerson Lake on May 30 and 31, 2006. 20 species of rooted submersed aquatic plants and one free-floating species were noted in the survey showing exceptional diversity. In addition two species often thought of as emergent plants were found growing as submersed species. Estimates of the area of significant Eurasian milfoil growth were similar to the previous season with approximately 17 surface acres of Jimmerson Lake being impacted during the August (post-treatment) Tier I survey. In accordance with the May Tier I survey results and treatment day field observations, Granular systemic aquatic herbicide (2, 4-D) was applied to 12 acres of these areas of the lake at the rate of 100 pounds per surface acre. The treatment was performed on June 8th and 9th. A touch-up treatment was applied to two acres of Milfoil impacted areas on July 10, 2006. In addition, herbicide treatments to control native and exotic plants along the shoreline and in the lakes boat channels were organized by the lake association separately from the LARE planned treatments and performed on approximately 25 acres of the lake. Post treatment Tier I and Tier II Plant Surveys were performed on August 9th and 10th, 2006. 20 species of submersed aquatic plants and two free-floating species were identified. Eurasian watermilfoil had rebounded in most of the areas treated in June and July. The amount of dense Eurasian watermilfoil growth present in August would have probably warranted treatment of 15 to17 acres of Jimmerson Lake. Residents indicated that the initial treatments were very effective, but Eurasian watermilfoil reappeared in the treatment areas several weeks after initial drop. The association treatments showed effectiveness in some areas, especially on the lakes narrower channels where good containment can be achieved, but late-season native plants still grew excessively in some areas. This was especially true of Tapegrass *Vallisneria americana* which showed extremely thick growth in some areas and was very prominent in the surveys. Based on spotty Eurasian milfoil treatment results and extensive regrowth in 2006, the Jimmerson Lake Association should repeat the use of 2, 4-D granular in affected areas and also plan on a follow-up treatment of the full affected acreage. It is unknown why longer lasting results were not obtained in Jimmerson's milfoil treatment areas in 2006. Water movement, treatment timing, seasonal climatic conditions, water chemistry, or the reintroduction of new plant fragments can all affect treatment effectiveness and longevity. Jimmerson Lake's Eurasian watermilfoil will not necessarily respond to treatment in the same way in 2007, but based on the 2006 results planning for treatment of up to 17 acres with full retreatment will be wise to prevent the further spread of this plant. With Eurasian watermilfoil occurring at 4.29 percent of sampling sites in August of 2006 a goal of maintaining Eurasian watermilfoil or other exotic plants at an occurrence at or below five percent of sampling sites would be a reasonable goal for future seasons. To curb problems with native plants in shoreline areas the Jimmerson Lake Association may want consider adding a second treatment to more effectively limit the growth of late season plants such as Vallisneria in high-use areas. To address the problems with native milfoil fragments a regime of boat-lane treatments should be maintained to curb prop-cutting in high traffic areas. Looking toward the implementation of a legal speed limit in narrow downstream areas of the lake may also help. To avoid the possible development of resistance to treatment a switch to another granular systemic herbicide

for Eurasian milfoil control in alternate years may be advisable in future seasons if such a product should achieve EPA licensing, become available to the aquatic market, and prove efficacious.

1.0 Introduction

Jimmerson Lake has been treated for nuisance aquatic plants for many years. Prior to 2006 treatments were primarily directed at reducing problem vegetation (both native and exotic) along the lake's developed frontages to facilitate the popular activities of swimming, boating, skiing, and fishing. Aware of the increasing prominence of Eurasian watermilfoil in Jimmerson Lake and the potential for a worsening of problems with aquatic plants, help was sought from the LARE program to target Eurasian watermilfoil and Curlyleaf pondweed on a lake-wide basis. Jimmerson Lake has an exceptionally diverse aquatic plant community. The species in the table below were noted in Jimmerson Lake during the 2006 season surveys.

Table 1 Common, Scientific names, and species codes for Jimmerson Lake submersed and free-floating aquatic plants

Common Name(s)	Scientific Name	Species Code	Nativity Native/Introduced	Indiana Status (Rare/Threatened/Endangered)
Variable watermilfoil	*Myriophyllum heterophyllum*	MYHE	N	
Variable pondweed	*Potamogeton gramineus*	POGR	N	
Chara, Muskgrass, Stonewort	*Chara* sp.	CH?AR	N	
Flatstem pondweed	*Potamogeton zosteriformis*	POZO	N	
Whitestem pondweed	*Potamogeton praelongus*	POPR5	N	Threatened
Eurasian watermilfoil	*Myriophyllum spicatum*	*MYSP2	I	
Richardson's pondweed	*Potamogeton richardsonii*	PORI	N	Rare
Illinois pondweed	*Potamogeton illinoensis*	POIL	N	
Curlyleaf pondweed	*Potamogeton crispus*	*POCR3	I	
Sago pondweed	*Potamogeton pectinatus*	POPE6	N	
Elodea, Common waterweed	*Elodea canidensis*	ELCA	N	
Horned pondweed	*Zannichellia palustris*	ZAPA	N	
Largeleaf pondweed	*Potamogeton amplifolius*	POAM	N	
Vallisneria, Tapegrass, Eelgrass, Wild celery	*Vallisneria americana*	VAAM	N	
Small pondweed	*Potamogeton pusillus*	POPU	N	
Robbins' pondweed, Robbins' fern, Fern pondweed	*Potamogeton robbinsii*	PORO	N	Rare
Coontail	*Ceratophyllum demersum*	CEDE	N	
Great bladderwort, Common bladderwort	*Utricularia vulgaris*	UTMA	N	
Floatingleaf pondweed	*Potamogeton natans*	PONA	N	
Water stargrass	*Zosterella dubia, Heteranthera dubia*	ZODU/HEDU	N	
Common Duckweed	*Lemna minor*	LEMI3	N	
Needle rush (submersed)	*Eleocharis acicularis*	ELAC	N	
Arrowhead (submersed)	*Sagittaria* sp.	SA sp.	N	
Filamentous algae	Any species	ALGA	N	
Common naiad, Slender naiad	*Najas flexilis*	NAFL	N	
Spiny naiad	*Najas marina*	NAMA	N	

2.0 Watershed and Lake Characteristics

While the overall watershed and lake characteristics for Jimmerson Lake are similar to the prior year, there have been some significant changes in the immediate watershed. Development of a large bay off of Jimmerson's south shore and other areas on the James Chain (upstream of Jimmerson) is occurring rapidly. Because this development is a potential source of nutrient run-off to Jimmerson Lake care must be taken to see that proper erosion control techniques are employed and maintained. High quality wetland areas and the lake's exceptionally diverse plant community will be subject to degradation if proper precautions are not taken during critical construction phases in which soil is disturbed and eroded. (See figs. 1 and 2 below)

Fig. 1 Sites of construction and soil disturbance near Jimmerson's wetlands should employ proper practices to stabilize soil exposed to rainfall and runoff. Erosion control practices are critical to lake health in these areas.

Fig. 2 Soil eroding through unmaintained silt fencing near Jimmerson Lake accentuates the difference a standing section of silt fence can make in the transport of nutrient-carrying soils to the lake.

Eroding sediments originating at construction sites along Jimmerson's shoreline can introduce nutrients that affect water quality. The introduction of sediments and nutrients can also cause shifts in wetland and aquatic plant communities that indirectly

affect water quality and the friendliness of the lakes plant community to both wildlife and recreation. The establishment and connection of the Jimmerson Lake residences to a centralized wastewater treatment plant is another recent watershed development with implications for aquatic plant control and water quality. Many private on-site septic systems were diverted to the new plant in 2005 and 2006. This undoubtedly reduced the nutrient loading to Jimmerson Lake. In some lake's this may affect the lake's plant community by initially increasing plant growth as a result of improved water clarity with a possible ultimate long-term reduction in plant growth as nutrient levels in the lakes hydrosoil are reduced over time. Because Jimmerson Lake already exhibits excellent water clarity this effect is not likely to be large. The reduction in the lake's nutrient load, however, is likely to be beneficial in terms of water quality over the long-term and will help to protect the diversity of the lakes native plant community. No other significant watershed changes were noted in 2006. For additional watershed information see: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006)

3.0 Lake Uses
There have been no significant changes in the current year.
See: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006)

4.0 Fisheries
There have been no significant changes in the current year.
See: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006)

5.0 Problem Statement
There have been no significant changes in the current year.
See: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006)

6.0 Vegetation Management Goals and Objectives
There have been no significant changes in the current year.
See: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006)

7.0 Plant Management History, 2006 Season Management Actions
Eurasian watermilfoil was targeted for localized treatment on a lake-wide basis on Jimmerson Lake in 2006. Patterns of colonization of this invasive plant vary, but often Eurasian watermilfoil forms dense colonies that exclude or nearly exclude the growth of other plants by forming light-blocking overgrowth early in the season before native plant propogules spring into action. In Jimmerson a low grade Eurasian watermilfoil infestation is distributed throughout the lake. This is demonstrated somewhat by the May Tier I map (fig 3) which indicates Eurasian watermilfoil is present to some extent in

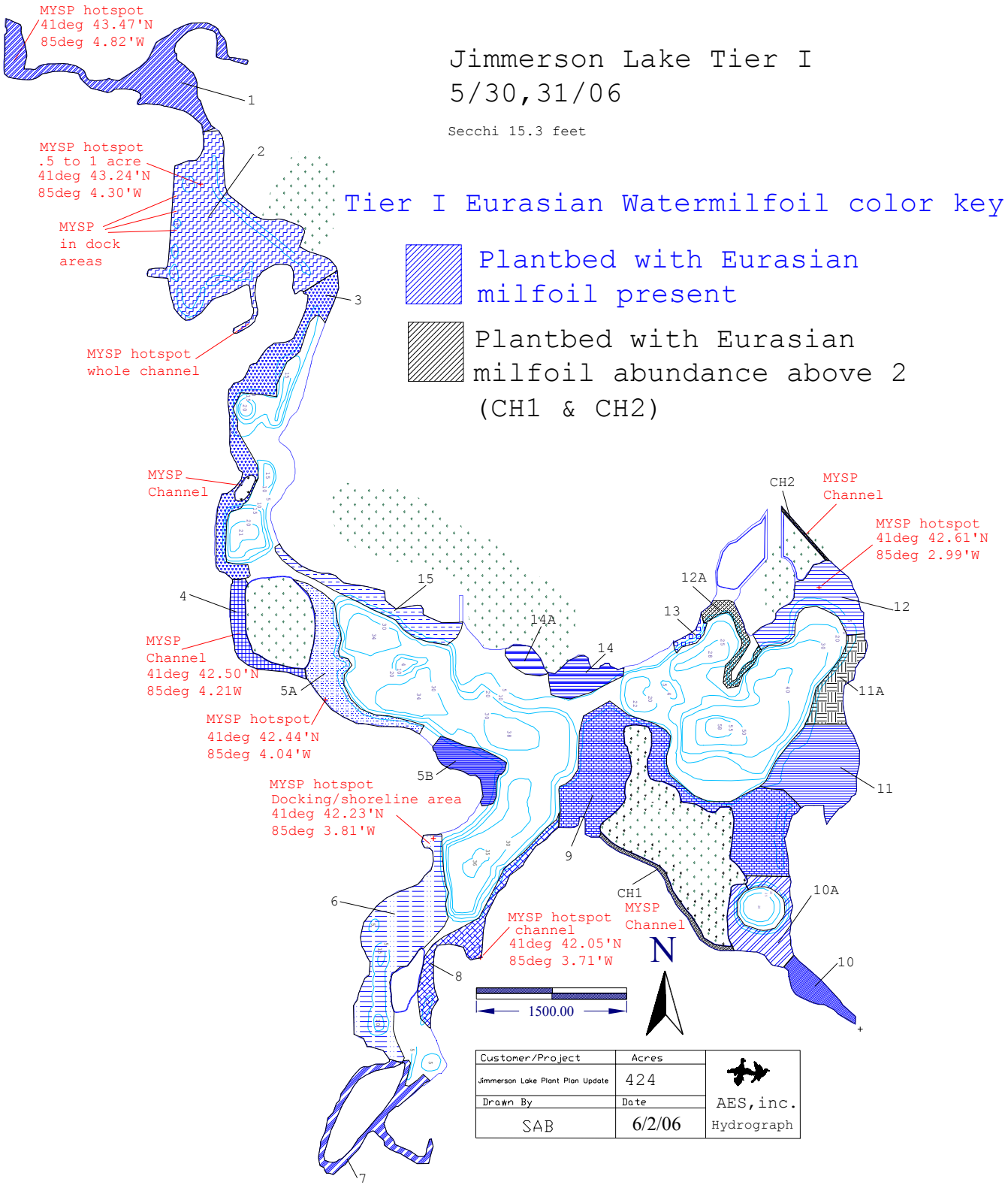


Fig. 3 May Tier I Plantbed Map showing plantbeds containing Eurasian watermilfoil

most areas of the lake, but is only high in abundance in a limited number of areas. Under the Tier I survey protocol conducted in May 22 distinct plant beds were designated in Jimmerson Lake. Eurasian watermilfoil was observed in 20 of the 22. It was assigned a visual abundance rating of greater than 2 (scale of one to four) in only two of those plantbeds (channel plantbeds CH1 & CH2, see fig. 3). The milfoil plants in many areas are mixed with the lake's native flora presenting little problem to the recreational and ecological quality of the resource. In fact, in most areas the Eurasian watermilfoil is overshadowed and out competed by a vigorous growth of native plants. In other areas, however, Eurasian watermilfoil has assumed dominance over the native flora and displaced it to some extent becoming the primary hindrance to recreational activity and hampering localized floral diversity. Because of this pattern of colonization in Jimmerson Lake the Eurasian watermilfoil control program has sought efficacy through the selective treatment of these areas of Eurasian watermilfoil dominance. It is hoped that targeting these areas will prevent their colonial spread. Many of the infested areas are in channels where high boat traffic has a maximum potential for cutting and transport of plant fragments that are likely to hasten the spread of the plant. Already engaged in a difficult battle controlling the growth of a diverse variety of native plants in many areas the Jimmerson Lake Association seeks to prevent the development of an even worse problem should Eurasian watermilfoil become dominant. Navigate brand granular 2, 4-D was applied to the 14 acres of Jimmerson Lake revealed to be primary locations of dominance and spread by Eurasian watermilfoil during the May Tier I survey. To maximize treatment efficacy small dense colonies, separated from other milfoil plants by considerable distances were marked for treatment with GPS coordinates noted. They are denoted by a red "+" on the treatment/milfoil map below (fig. 4). Whereas 2, 4-D shows a highly selective toxicity for broadleaf plants, the class of plants to which Eurasian watermilfoil belongs, damage to most native plants is minimal or negligible. Small colonies located in clusters, larger areas of colonization, or channels that are likely sources of spread were treated with broader treatments to insure complete coverage. The 14 acres of treatments was completed in two separate treatments with the first taking place on June 8 & 9 and the second taking place on July 10. (See fig. 5 & 6) Common area treatments (1.5 acre) and approximately 25 acres of shoreline treatments to control native and exotic plants were conducted on the same days. According to residents the treated Eurasian watermilfoil plants dropped out of the water column within three weeks. Post treatment Tier I and Tier II surveys performed in August showed Eurasian watermilfoil to again be present in most of the lake's plantbeds and in the treatment areas. (See fig. 7) Densities were similar to the pre-treatment period in most of the peak areas of colonization or "hot spots". During the post-treatment Tier I survey performed in august of 2006 the same 22 separate plantbeds were designated. Eurasian watermilfoil was now noted in 19 of the 22 and was assigned a visual abundance rating of over two in one plantbed. During Tier II plant sampling on August 9 and September 11 and 12 of 2006 seventy random stratified plant-rake tosses in Jimmerson Lake collected Eurasian watermilfoil at only three sites (4.3%). Despite dense milfoil colonization in several areas, statistically speaking Jimmerson's thriving native plant community tends to swallow up its Invasive plant problem. Curlyleaf pondweed, also an exotic invasive aquatic plant was present in several plantbeds in Jimmerson Lake, but appeared to pose only a limited threat to the ecology or recreational viability of the lake in 2006.

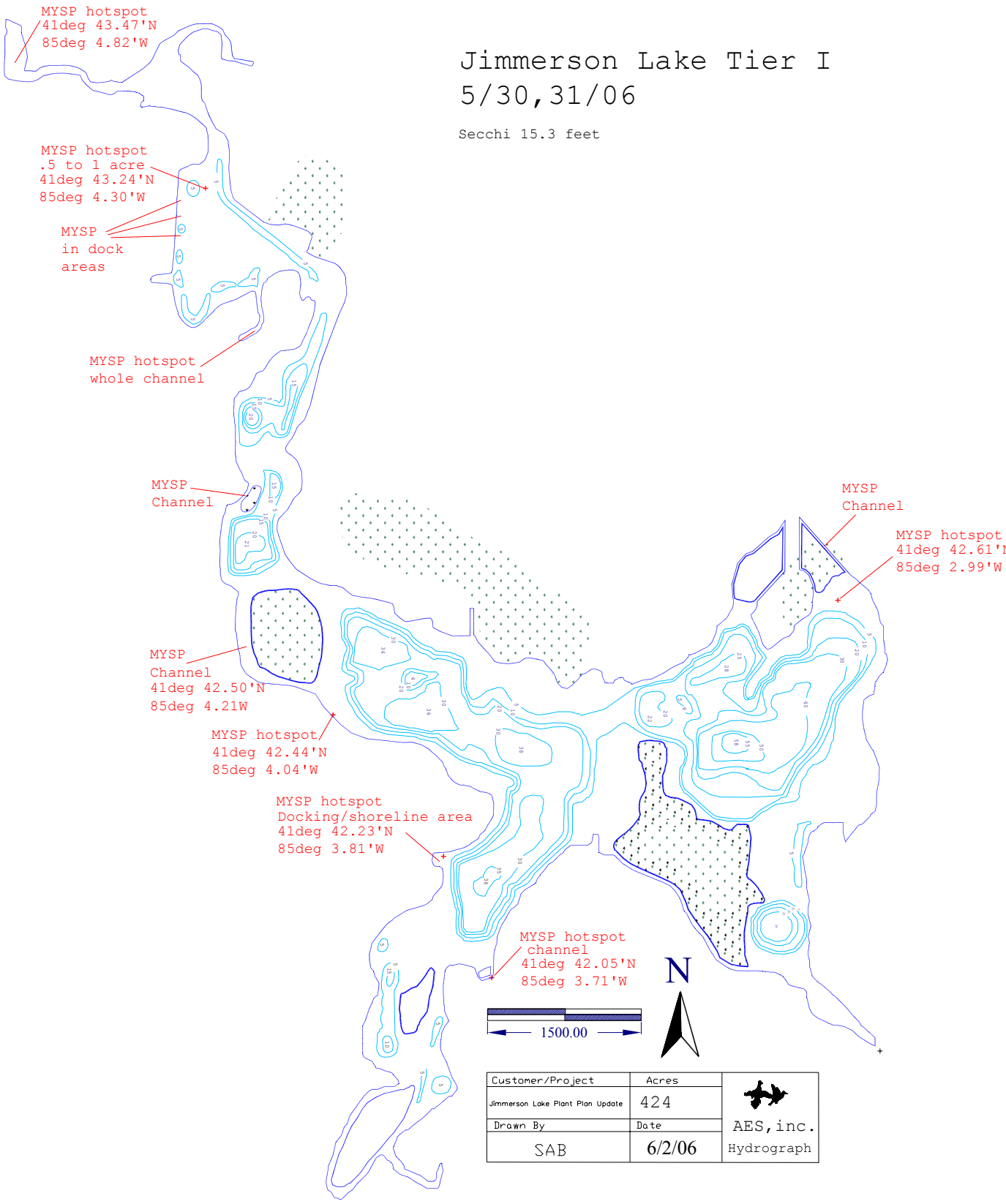


Fig. 4 GPS marked locations of Eurasian watermilfoil growth in 2006

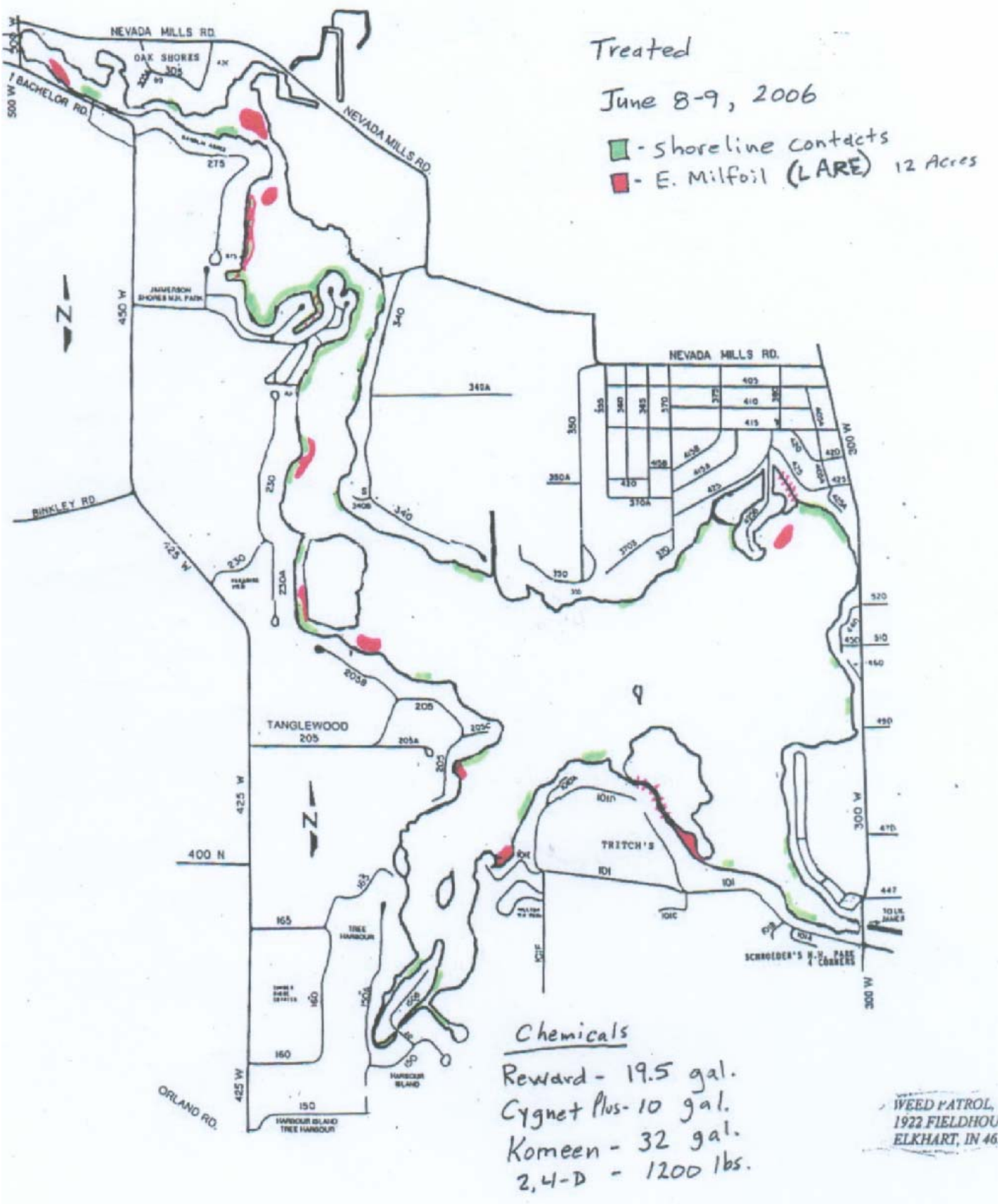


Fig. 5 Jimmerson Lake treatment areas 6/8,9/06

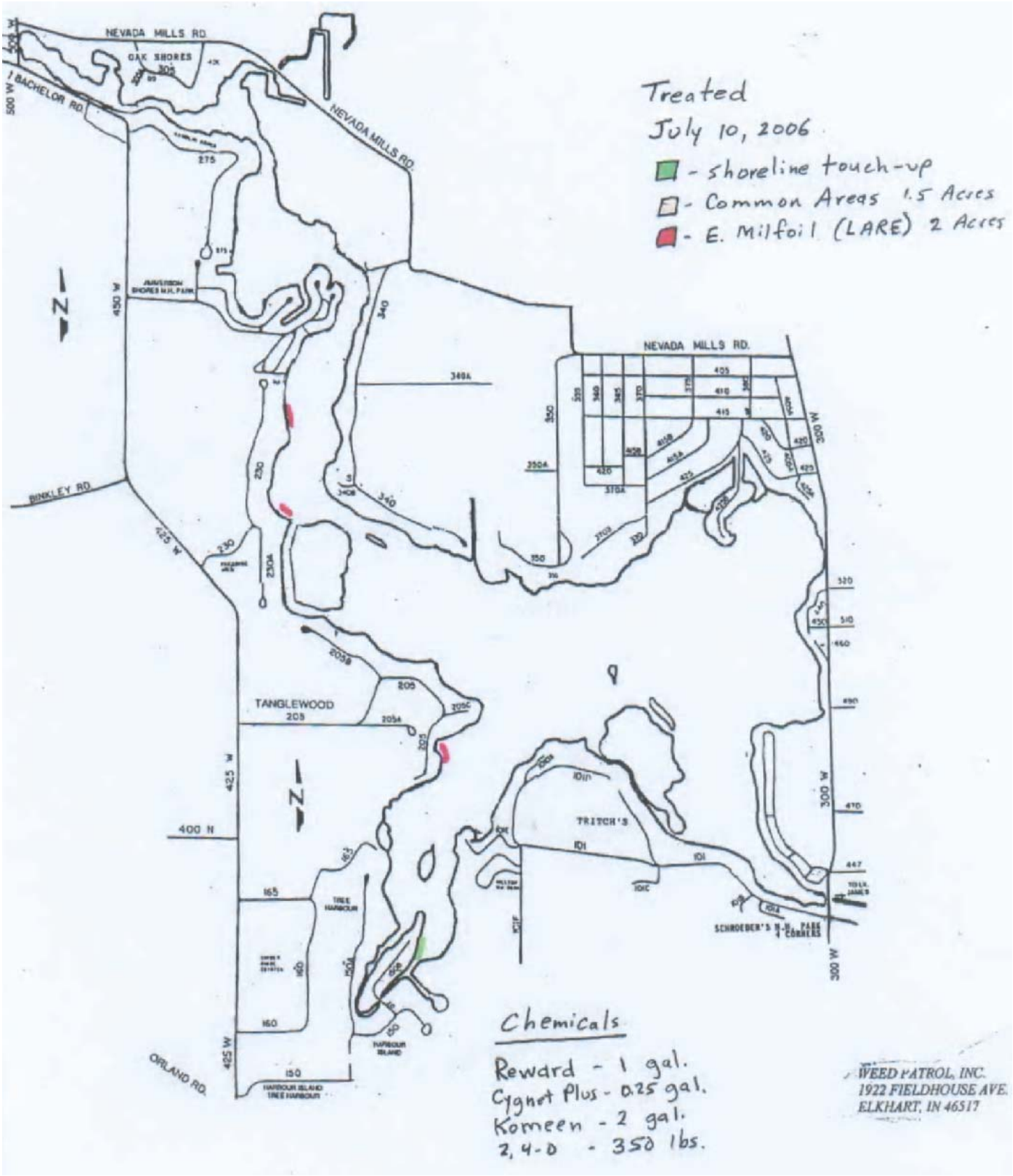


Fig. 6 Jimmerson Lake 7/10/06 treatment areas

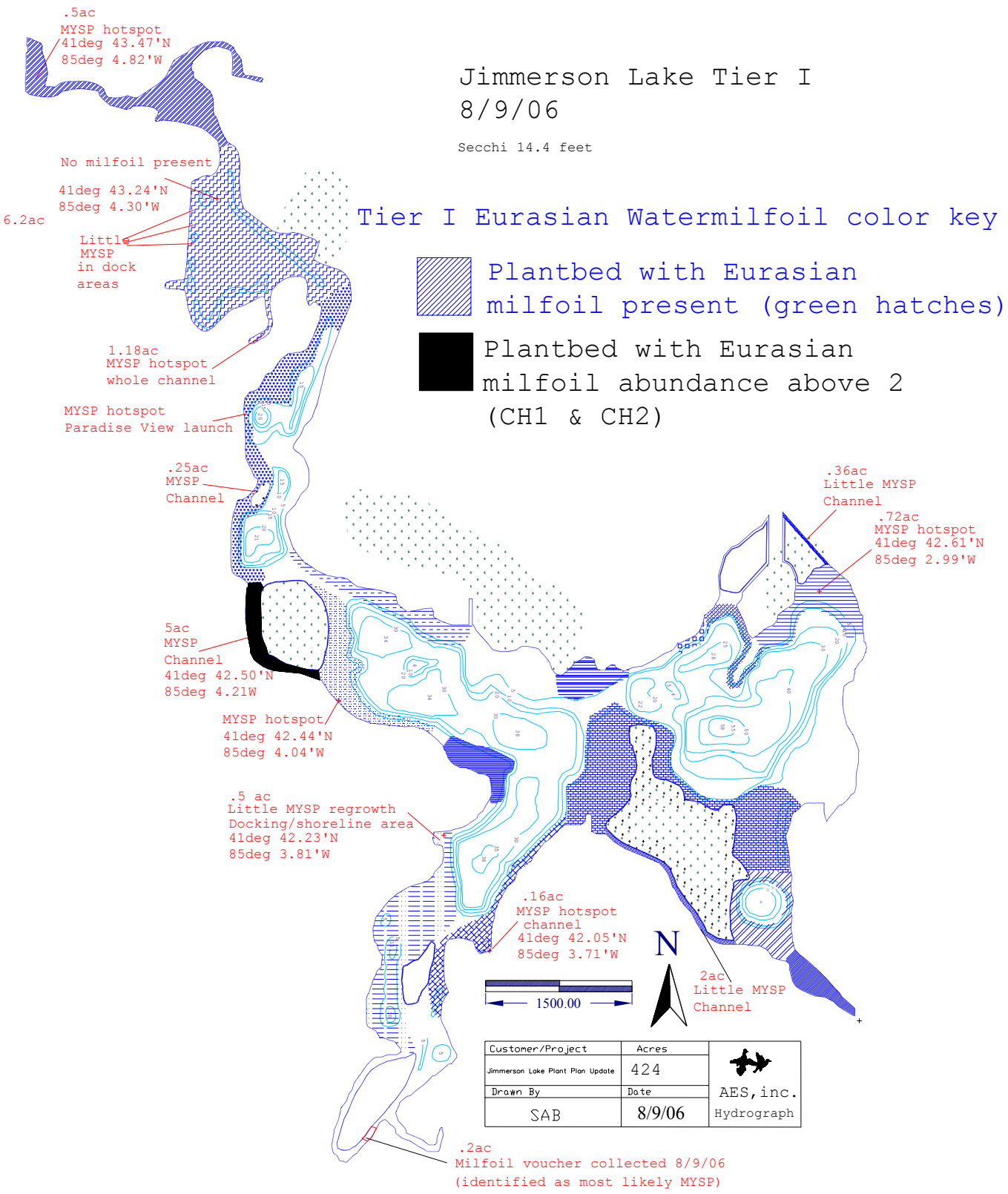


Fig. 7 August Tier I plantbed map showing plantbeds containing Eurasian watermilfoil

8.0 Aquatic Plant Community Characterization

8.1 Methods

Plant sampling in 2006 included Tier I surveys on 5/30,31/06 and 8/9,10/06 utilizing the same sampling protocol as in the original Plant Management Plan. For details see: *Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009* (Weed Patrol, Inc. 2006) A single Tier II survey was performed on 8/9,10 and 9/11,12/06. The tier II protocol was modified over the original protocol used in the Plant Management Plan by redesignating rake-toss sampling effort according to lake trophic status (oligotrophic) combined with lake size (346 acres) rather than lake size alone. In addition sampling was performed in a depth-stratified manner with a specified number of samples collected in depth contour categories according to the following table:

		Hypereutrophic		Eutrophic			Mesotrophic				Oligotrophic				
Lake Acres	Total # of Sites	0-5 foot contour	5-10 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	20-25 foot contour
<10	20	10	10	10	7	3	10	5	3	2	10	4	3	2	1
10-49	30	20	10	10	10	10	10	10	7	3	10	10	5	3	2
50-99	40	30	10	17	13	10	10	10	10	10	10	10	10	7	3
100-199	50	40	10	23	17	10	14	14	12	10	10	10	10	10	10
200-299	60	50	10	30	20	10	18	16	16	10	14	12	12	12	10
300-399	70	60	10	37	23	10	22	20	18	10	17	15	14	14	10
400-499	80	70	10	43	27	10	25	23	22	10	19	18	17	16	10
500-799	90	80	10	50	30	10	29	27	24	10	22	21	19	18	10
>=800	100	90	10	57	33	10	33	31	26	10	25	23	22	20	10

Table 2 Tier II Sample size requirements as determined by lake size, trophic state, and apportioned by depth class (source IDNR)

8.2 Results

8.2.1 Tier I

During the May 30 and 31 Tier I survey 22 areas of Jimmerson Lake's littoral zone were designated as Plantbeds (see fig. 3) based on their relative homogeneity of biological and physical characteristics. These same plantbed boundaries were also utilized in a second Tier I survey on August 9 and 10. Substrate, size, and abundance data for the two surveys is located in tables 3 and 4 below. A short description of each plantbed follows.

Plantbed 1- Plantbed one includes the 14.27 acres nearest the lake's outlet at Nevada Mills dam. This includes the basin just above the dam known as the Mill Pond. This area has substantial water movement. There is approximately one half acre of Eurasian watermilfoil in this area worthy of treatment. The substrate in this area is silt with sand. Organic material is present in some backwater areas. There are fifteen submersed species of plant present. Variable milfoil and Largeleaf pondweed *Potamogeton amplifolius* are most common.

Table 3 Jimmerson May 2006 Tier I Survey Data 5/30,31/06

*introduced species ●RTE species

Plantbed	1	2	3	4	5 A	5B	6	7	8	9	1 0	10 A	11	11 a	12	12 A	1 3	14	14 A	15	CH 1	CH 2
Acres	14.3	34.2	13	4	9.96	4.95	20.4	6.18	6.59	29.4	3.5	7.28	13.8	5.56	9.41	2.95	.91	4.44	1.95	7.19	1.84	.45
Substrate	2	2		2	1/3	¼	3	2	2	4/2	3	2	3	3	3	2	2	3	2	2	1	2
Marl?									1		1	1										
High Organic?	1			1				1		1		1							1		1	1
MYHE	3	2	3	2	3	3	3	3	2	2	3	3		2	2	2	3	3	3	2	1	2
POGR	2	2	2			2	2	2	2	2	2		2	2	2	2	2	2	2	2		
CHAR	2	3	3		4	4	4	3	3	2	2	3	2	3		2	2	2				2
POZO	1	2	2	2	2		1	2	1	2		1	1		2		1			2	1	
●POPR5	2	2	2	2					2	2	2	2			2	2	2	2	1	2		
*MYSP2	2	2	2	2	2	2	2	1	2	2	2	2	2		2		2	2	1	1	3	3
●PORI	2	1	2							1					2							
POIL	2	2	2		2	2	2		2	2	2	3	1	2	2	2		2		2		
*POCR3	2	2	2	3	2	2	2	2	2	2	2	2	2			1	2		2	1	3	2
POPE6		1	1	1	2	1	1	2	2	1	1	1		1	1			2		1		2
ELCA	2	1	2	2	2		2	2	2	2	3	2					2		2			1
ZAPA	2	2	2					2	1		1	2					2				2	1
POAM	3	2	2	3				2		1	1		1									
VAAM	1									2										1		1
POPU	1	1								2	1	1									2	1
●PORO			1		2		1						3		2					1		
CEDE	1							2		2											3	1
UTMA						1		1					1	1								
POsp.																						
RAAQ																						
PONA								1											1	1		
HEDU																					1	
Lemna																						2
Needle rush							2						3					1				
SA sp. f..i								1														
ALGA																					3	
W. Buttercup									1													

Table 4 Jimmerson August 2006 Tier I Survey Data 8/9,10/06

*introduced species ●RTE species

Plantbed	1	2	3	4	5 A	5B	6	7	8	9	1 0	10 A	11	11 a	12	12 A	1 3	14	14 A	15	C H 1	CH 2
Acres	14.3	34.2	13	4	9.96	4.95	20.4	6.18	6.59	29.4	3.5	7.28	13.8	5.56	9.41	2.95	.91	4.44	1.95	7.19	1.84	.45
Substrate	2	2	2	2	1/3	¼	3	2	2	4/2	3	2	3	3	3	2	2	3	2	2	1	2
Marl?									1		1	1										
High Organic?	1			1				1		1		1							1		1	1
MYHE	3	2	3	3	3	3	3	3	3	3	3	3	3		3	3	4	3	3	2	1	2
POGR				2	2	2	2	2	2			1	2	1	2				2	2	2	
CHAR	3	4	3	3	3	2	3	3	3	3	3	3	3	2	2	3	2	2	3	3		2
POZO	2	2	2	3	2		2	2	3			1	2		1					2	1	
●POPR5		2	1	1	2		2								1					1		
*MYSP2	2	1	1	3	2	2	2	2	2	1	1	1			2	1	2	1		1	2	2
●PORI	2	2	3	3							2	2				1						
POIL	2	3	3	2	2	3	3	3	2	3	3	3	3	1	3	3		3	3	3		
*POCR3		1	1								1										1	
POPE6	1	1	2	1	2	2		1				1	1			1	1			1	1	
ELCA											1											
ZAPA																						
POAM	2	3	2	3			2	2			1											
VAAM	4	3	1	4	3	3	2	2	2	2	3	2	2	1	3	3	3	2	2	2	2	2
POPU								1	2				1							2		2
●PORO													1						1			
CEDE							1	1	1		1	1									3	2
UTMA		1	1		1		1	3		1			1	1								
POsp.																						
RAAQ																						
PONA						1		2	2				1							1		
HEDU	3																					
Lemna																						2
Needle rush		1					2	2	2				1					2	3	3		
SA sp. f..i	1				1				1		1		1									
ALGA			1																		1	2
W. Buttercup																						
NAFL	1		2	2	2	1	2	2	2		1	1			1				1	2	1	
Wolfia																						2

Plantbed 2- This plantbed is a marshy 34.17 acre basin ringed by houses on it's West and South side. There is approximately seven acres of Eurasian watermilfoil in this plantbed including docking areas and a long channel. The bottom of this basin is silt with sand. There were 14 species of submersed plant noted here in the May survey.

Plantbed 3- Plantbed three is 12.98 acres. Its bottom is silt with sand. During the May survey there were 14 species of submersed plant present. There is approximately one quarter acre of treatable Eurasian watermilfoil in this area. Chara and Variable watermilfoil are the most common plants. There is a private concrete boat ramp on the shore in this plantbed.

Plantbed 4- Plantbed four is four acres in size. It substrate is silt with sand. Because this is a dredged channel bordered by a wetland there is a high amount of organic sediment present. During the May survey there were eight species of submersed aquatic plant present. The submersed flora was dominated by Largeleaf pondweed and Curlyleaf pondweed during the May survey. There was enough Eurasian milfoil present to warrant treatment of this entire plantbed during both surveys.

Plantbed 5A- Plantbed five is 9.96 acres in size with a silt, hard clay, and sand bottom. This plantbed includes a considerable area that is probably a historically artificially flooded wetland (lake level increase at dam construction). Part of this area has a hard clay bottom that has only been lightly colonized by aquatic plants. There were nine species of submersed plant noted in this plantbed during the May survey. The flora in this area is dominated by Chara. There is approximately one half acre of Eurasian watermilfoil in this area.

Plantbed 5B- Plantbed 5B is 4.95 acres in size with a silt, clay, and hard clay bottom. There were eight species of submersed aquatic plant noted in this plantbed in the May survey. The flora is dominated by Chara.

Plantbed 6- Plantbed six is 20.4 acres in size with a sand-with-silt bottom. Eleven submersed species of aquatic plant were noted in this plantbed during the May survey. There is approximately one half acre of Eurasian watermilfoil in this plantbed. The flora is dominated by Chara.

Plantbed 7- Plantbed seven is 6.18 acres in size with a silt and sand bottom. Because much of this plantbed is a channel area excavated from wetlands there is a large amount of organic material present in some areas. There are many high quality wetlands located in this area and it is also being developed with lakeside homes and condominiums rapidly. Fourteen species of submersed aquatic plant were noted in this area during the May survey. This plantbed contains approximately one quarter acre of Eurasian watermilfoil. The flora is dominated by Chara and Variable watermilfoil.

Plantbed 8- Plantbed eight is 6.59 acres in size. The substrate is silt with sand. Marl is also present. There were 12 species of submersed plant present during the May survey. There are approximately .16 acres of dense Eurasian watermilfoil growth

present in a channel/docking area within this plantbed. Chara is the dominant plant in this bed as a whole.

Plantbed 9- Plantbed nine is 29.4 acres in size. Its substrate is a mix of hard clay and silt-with-sand. A high amount of organic material is present in some areas. There were 15 submersed plant species noted during the May survey. Little heavy Eurasian watermilfoil growth was noted in this plantbed during the May and August surveys.

Plantbed 10- Plantbed 10 is 3.5 acres in size with a sand-with-silt bottom. Marl is present. There were 12 species of submersed aquatic plant present during the May survey. This plantbed was dominated by Elodea and Variable watermilfoil. Eurasian watermilfoil growth is light in this plantbed.

Plantbed 10A- Plantbed 10 is 7.28 acres with a silt-with-sand substrate. Both marl and organic sediments are present in some areas. Eleven species of submersed plant were noted in the May survey. Eurasian watermilfoil growth in this area was light. Variable watermilfoil, Chara, and Illinois pondweed were most common.

Plantbed 11- Plantbed 11 is 13.8 acres and has a sand-with-silt substrate. Ten species of submersed plant were present during the May survey. Submersed Needle rush *Eleocharis acicularis* and Robbins' fern *Potamogeton Robbinsii* were most common. Eurasian watermilfoil colonization of this area is light.

Plantbed 11A- Plantbed 11A is 5.56 acres in size with a silt-with-sand substrate. Six species of submersed aquatic plant were noted during the May survey. No Eurasian watermilfoil was seen in this area during the May survey.

Plantbed 12- Plantbed 12 is 9.41 acres in size with a sand-with-silt bottom. Nine species of submersed plant were noted in this area during the May survey. There is approximately .72 acres of heavy offshore Eurasian watermilfoil growth in this area.

Plantbed 12A- Plantbed 12A is 2.95 acres with a silt-with-sand bottom. Six species of submersed aquatic plant were noted in this plantbed during the May survey. No Eurasian watermilfoil was noted in this plantbed during the May survey.

Plantbed 13- Plantbed 13 is .91 acres in size with a silt-with-sand bottom. There were nine species of submersed aquatic plant noted in plantbed 13 during the May survey. This area is dominated by Variable watermilfoil. Colonization of this area by Eurasian watermilfoil is light.

Plantbed 14- Plantbed 14 is 4.44 acres in size with a sand-with-silt bottom. There were seven species of submersed aquatic plant noted in plantbed 14 during the May survey. Eurasian watermilfoil colonization of this area was light in 2006.

Plantbed 14A- Plantbed 14A is 1.95 acres in size with a silt-with-sand bottom. Organic sediments were present in some areas. Seven species of submersed aquatic

plant were present during the May survey. Variable watermilfoil was most common. Eurasian watermilfoil growth was light in 2006.

Plantbed 15- Plantbed 15 is 7.19 acres in size with a silt-with-sand substrate. Eleven species of submersed aquatic plant were present during the May survey. Little Eurasian watermilfoil was present in plantbed 15 in 2006.

Plantbed CH1- Plantbed CH1 is a narrow 1.84 channel excavated at the interface of a riparian wetland and higher ground creating a wetland island in the lake. The bottom of this channel is clay-with-silt. It is developed with lakeside lots. A large amount of organic sediments is continually re-suspended in this channel during the summer by boat traffic. Eight species of submersed aquatic plant and filamentous algae were noted in this channel during the May survey. Prior to treatment the flora was dominated by Eurasian watermilfoil. Later in the season Coontail became most common. Satisfactory control of aquatic plants appeared to be achieved after the 2006 treatment of this area.

Plantbed CH2- Plantbed CH2 is a very narrow and shallow .45 acre channel. Its bottom is highly organic silt-with-sand. Eleven species of aquatic plant were present during the May survey. Eurasian watermilfoil was the most common plant before treatment but only a light growth was present during the August survey. Good control of aquatic plants in general was achieved by treatment in this channel in 2006 but the channel is very shallow, largely filled-in with sediment, and barely navigable.

Descriptor	Early Season 5/05	Late Season 8/25/05	Late Season 8/9/06, 9/11,12/06	range for 21 other Indiana lakes (Pearson 2004)	mean for 21 other Indiana lakes (Pearson 2004)
# Sampling sites	60	60	**70**		
Total number of species	7	6	**14**	1 to 17	8
Total number of native species	5	5	**12**	1 to 16	7
Mean number of species per site	1.96	1.32	**2.46**	.38 to 2.66	1.61
Species diversity index (SDI), 0-1 scale,	n/d	n/d	**.85**	0.0 to .91	0.66
Aquatic Vegetation % Frequency of Occurrence	78.33%	73.3%	**92.86**	n/d	n/d

Table 5 Tier II overall plant community descriptors for Jimmerson Lake 2005/2006

8.2.2 Tier II

Tier II plant sampling was completed on August 9th, 2006. A GPS unit malfunction resulted in false coordinates being collected so part of the sampling had to be repeated on September 11 and 12, 2006. Rake tosses were performed at 70 random stratified sampling sites per INDR Tier II Protocol. (IDNR 2006) Sampling site coordinates were recorded on a WAAS enabled hand-held GPS unit, converted to Autocad® coordinates, and mapped on a contour map of Jimmerson Lake. (Figure 23) Statistical plant community descriptors for the Tier II survey performed on Jimmerson Lake 2006 are listed in the table above. (Table 5) These descriptors were based on the descriptor set from (Pearson 2004). For comparison, the range and mean of descriptors from a set of 21 other Indiana lakes (Pearson 2004) are listed in the table. Plant community data from specific contour areas are also provided in the tables below. Maps showing rake scores and collection locations for the three most abundant species; Chara, Variable watermilfoil, and Tapegrass are also provided. (figures 24, 25, 26 respectively)

8.3 Macrophyte Inventory Discussion

Jimmerson Lake is solidly near the top of Indiana Lakes in terms of aquatic plant diversity. Fourteen species were collected compared to a mean of 8 for the set of 21 lakes and a maximum of 17. Twelve native species were collected compared to an average of seven and maximum of 16 for the set of 21 lakes. The mean number of species-per-site was 2.46 compared to a 21 lake mean of 1.61 and 21 lake maximum of 2.66. The species diversity index score for the 8/06 sampling was .85 compared to a 21 lake mean of .66 and a 21 lake maximum of .91. Vegetation was recovered at 92.86% of all sampling sites. This diversity is probably largely a result of good water clarity coupled with a wide variety of substrates present at Jimmerson Lake. Substrates include rich organic silts in backwater areas, hard clay bottom adjacent to wetlands and coarse sands and gravels in wind and wave swept areas. Chara was the most abundant plant being collected at 55.71% of sampling sites. Variable watermilfoil was close behind at 51.43% of sites. Vallisneria was third at 41.43% of sites. These rankings are quickly apparent in a late-season visit to Jimmerson Lake. In deeper areas Variable pondweed grows very thickly, dominating nearly all of the lake's drop-off areas. In shallower waters Vallisneria grows thickly in the late season. Chara is typically ubiquitous as a low-meadow-growing understory plant. Both Variable watermilfoil and Vallisneria cause significant problems for homeowners and recreational users of the lake. While they are present in many areas and relatively easy to find visually at Jimmerson Lake, none of the three RTE (rare, threatened, or endangers) species was collected in the 2006 sampling. At Jimmerson Lake this is probably more a result of the abundant Chara, Variable watermilfoil, or Vallisneria filling the rake to capacity before it was able to collect these plants, rather than a statistical scarcity. Chara was found growing to a depth of 27 feet. No other plants were found growing beyond the 21-25 foot depth contour so the current IDNR sampling protocol included nearly the entire plant community. Where the identity of collected plants was in question or rare status warranted doing so, plant specimens were collected for identification and/or preservation by aquatic botanists at Purdue University North Central. Plant samples received in good

condition were preserved at the herbarium as voucher specimens. The table below summarizes plant samples collected and sent.

Table 6 Jimmerson Lake plant vouchers collected in 2006

Date Collected	Sample Number	Initial Identification Suspected	Substrate	Lat	Lon	Other plants in association	Depth	Pudue University North Central Identification
5/30/06	1	*Potamogeton Praelongus*	Sand with silt	41 deg 41.983 min N	85 deg 2.980 min W	Myriophyllum heterophyllum	3.5 ft	*Potamogeton Praelongus*
5/30/06	3	*Potamogeton richardsonii*	Silt with sand	41 deg 42.32 min N	85 deg 3.32 min W	No data	No data	*Potamogeton richardsonii*
5/30/06	4	*Potamogeton robbinsii*	Silt with sand (organic)	41 deg 42.30 min N	85 deg 3.01 min W	Eleocharis acicularis, Myriophyllum heterophyllum, Chara sp.	3.5 ft	Unknown (poor condition)
5/30/06	5	*Potamogeton sp. (unknown)*	Silt with sand	41 deg 42.58 min N	85 deg 3.86 min W	Potamogeton crispus, Potamogeton praelongus, Potamogeton illinoensis	5 ft	*Potamogeton pusillus*
8/9/06	2	*Potamogeton sp.* (unknown)	Hard Clay	41 deg 42.44 min N	85 deg 4.03 min W	No data	4 ft	characteristics that grade between *P. illinoensis* and *P. gramineus*, most similar to *Potamogeton Illinoensis*
8/9/06	3	*Myriophyllum sp.* (unknown)	Silt with sand (organic)	41 deg 41.76 min N	85 deg 3.94 min W	No data	5 ft	*Myriophyllum spicatum*

Curlyleaf pondweed, although present was not collected in the Tier II sampling. As an early-season species this was not surprising. Curlyleaf pondweed can cause significant problems during the first half of the summer as an invasive species and then complete its life cycle and drop out of the water column by August. This is the case with some areas of Jimmerson Lake. Eurasian watermilfoil was recovered at 13.30 percent of sites in 2005 and 4.25 percent of sites in 2006. The 2006 survey occurred after most of the milfoil infested areas had recovered from the June treatments. Because Tier II sampling is random and Eurasian watermilfoil occurs in Jimmerson Lake in a widely scattered manor it's possible that the tier II results will not always directly reflect seasonal treatment effectiveness in Jimmerson. However, treatment success will no doubt eventually filter through to the prominence of milfoil in the plant community at large by minimizing the transport of plant fragments from thickly colonized areas to other plantbeds. Holding the lakewide abundance of Eurasian watermilfoil at or near an occurrence of five percent under the current Tier II protocol is probably a reasonable management goal in the current situation. Because sampling was stratified by depth specific conclusions can be drawn about the depth stratification of the Jimmerson's plant community. Species diversity was very good in all depth contours except the 21-25 foot depth contour. Diversity in terms of the Species Diversity Index (SDI) peaked between the six and 10.9 foot depth contours (SDI=.87). This was not surprising considering that a "weedline" or peak area of plant biomass often occurs at this depth in clear glacial

lakes. Eurasian watermilfoil occurred in the 0-5.9 foot zone and the 16-20.9 foot zone, just outside the weedline.

August 05/06	2005 (Weed Patrol, Inc.) occurrence (# of sites)	2006 occurrence (# of sites)	2005 % of sites	2006 % of sites	2005 mean density	2006 mean density	2005 relative density	2006 relative density
Chara	12	39	20.00%	55.71%	1.33	2.9	0.36	1.61
Variable watermilfoil	13.02	36	21.70%	51.43%	3.46	3.6	1.02	1.86
Vallisneria	12	29	20.00%	41.43%	3.00	2.2	0.82	0.9
Great bladderwort	0	18	0.00%	25.71%	0.00	2	0.00	0.51
Illinois pondweed	0	10	0.00%	14.29%	0.00	2.6	0.00	0.37
Slender naiad	0	7	0.00%	10.00%	0.00	1.3	0.00	0.13
Variable pondweed	0	7	0.00%	10.00%	0.00	1.6	0.00	0.16
Coontail	0	6	0.00%	8.57%	0.00	2.7	0.00	0.23
Spiny naiad	0	5	0.00%	7.14%	0.00	3.4	0.00	0.24
Elodea	0	4	0.00%	5.71%	0.00	1	0.00	0.06
Small pondweed	0	4	0.00%	5.71%	0.00	1.5	0.00	0.09
Eurasian watermilfoil	7.98	3	13.30%	4.29%	2.13	2.7	0.39	0.11
Sago pondweed	6	3	10.00%	4.29%	2.50	1	0.34	0.04
Flatstem pondweed	0	1	0.00%	1.43%	0.00	1	0.00	0.01
Largeleaf pondweed	7.02	0	11.70%	0.00%	1.57	0	0.25	0

Table 7 Species specific Tier II descriptors for Jimmerson Lake 2005/2006

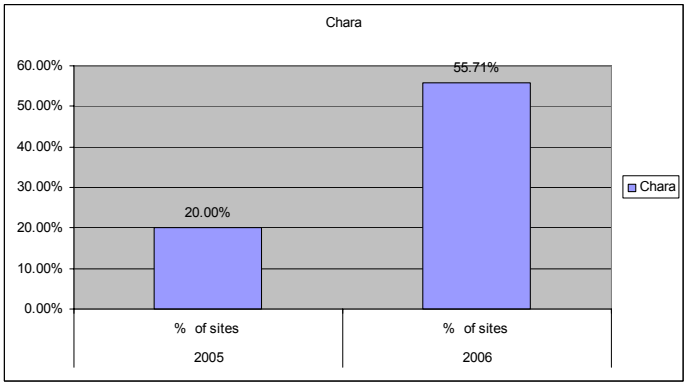


Fig. 8 Percent of sites with Chara August 2005 & 2006

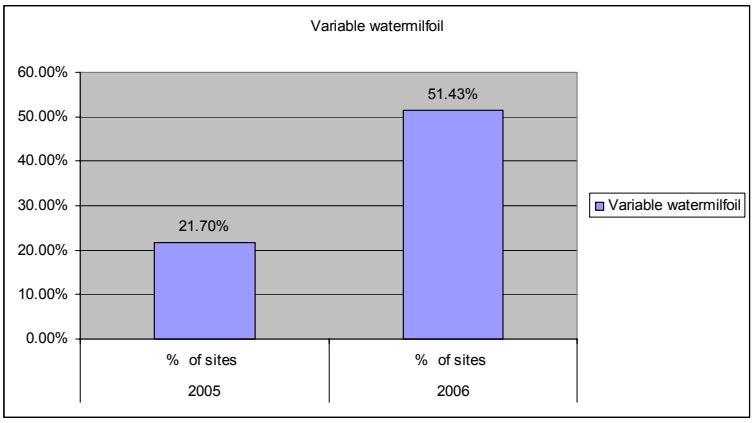


Fig. 9 Percent of sites with Variable watermilfoil, August 2005 & 2006

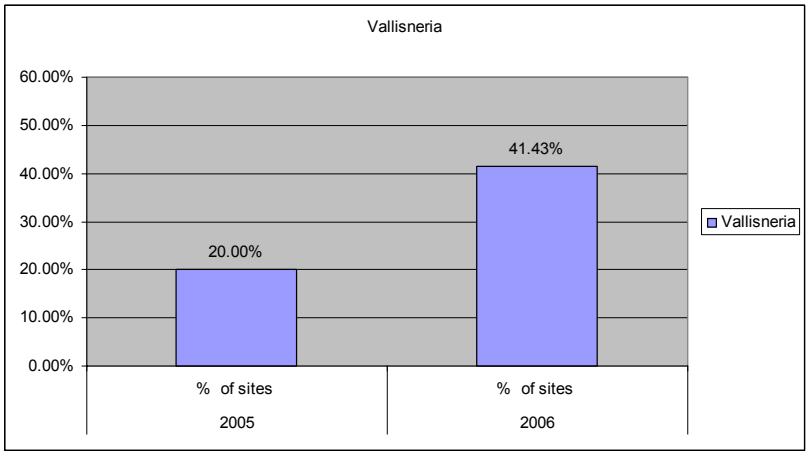


Fig. 10 Percent of sites with Vallisneria, August 2005 & 2006

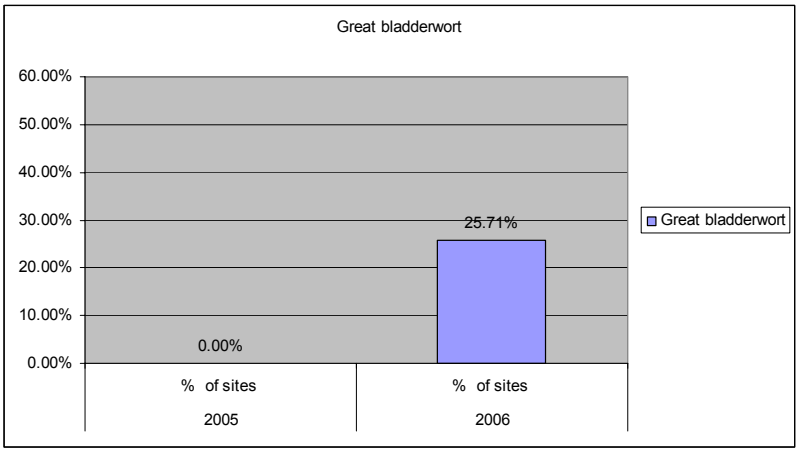


Fig. 11 Percent of sites with Great bladderwort, August 2005 & 2006

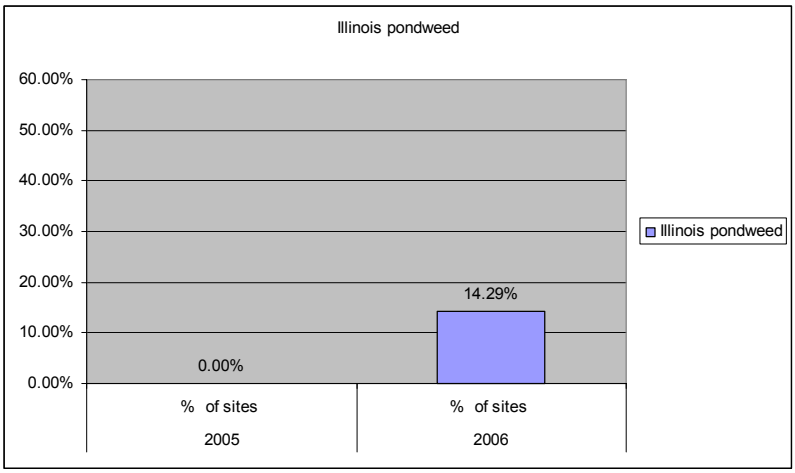


Fig. 12 Percent of sites with Illinois pondweed, August 2005 & 2006

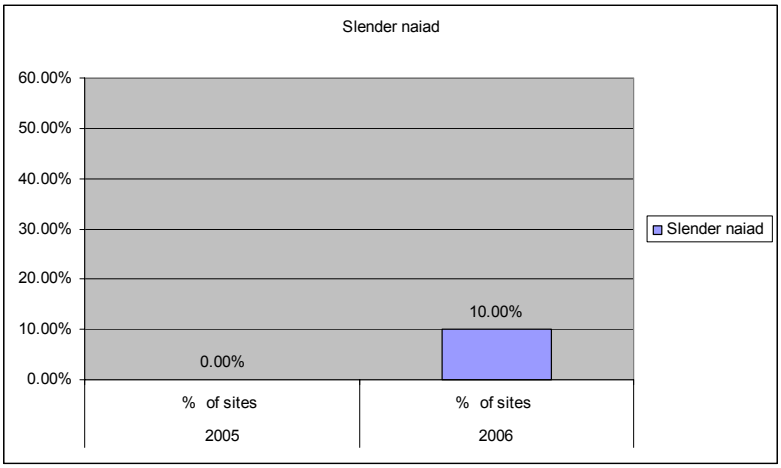


Fig. 13 Percent of sites with Slender naiad, August 2005 & 2006

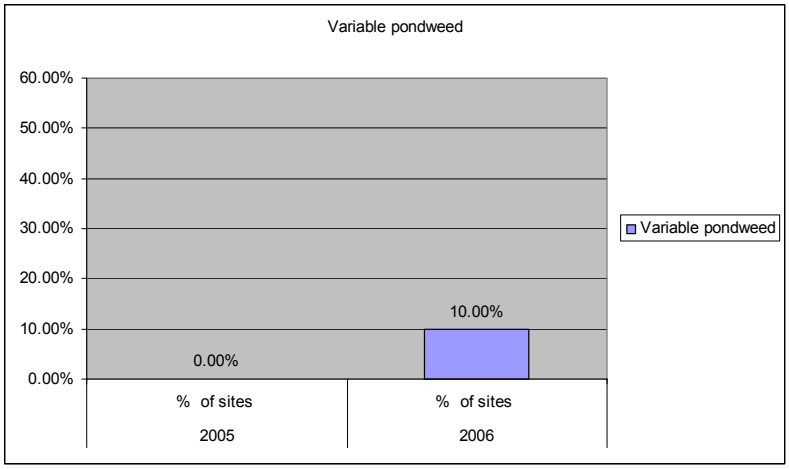


Fig. 14 Percent of sites with Variable pondweed, August 2005 & 2006

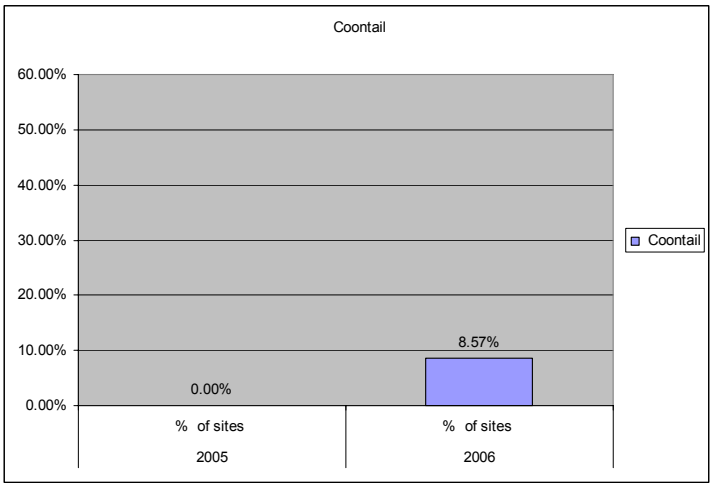


Fig. 15 Percent of sites with Coontail, August 2005 & 2006

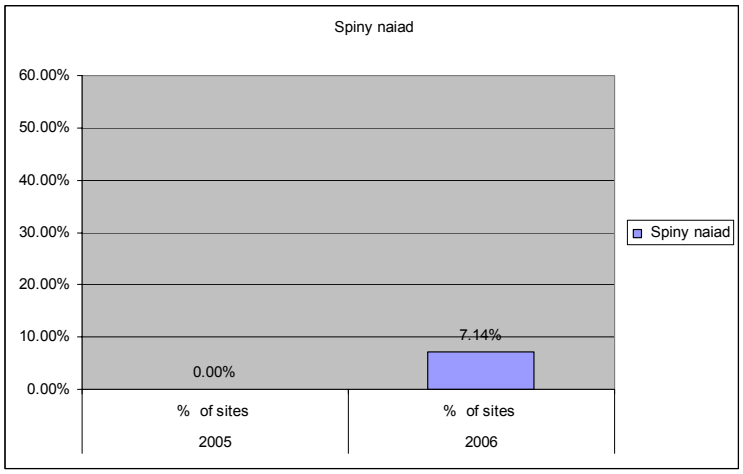


Fig. 16 Percent of sites with Spiny naiad, August 2005 & 2006

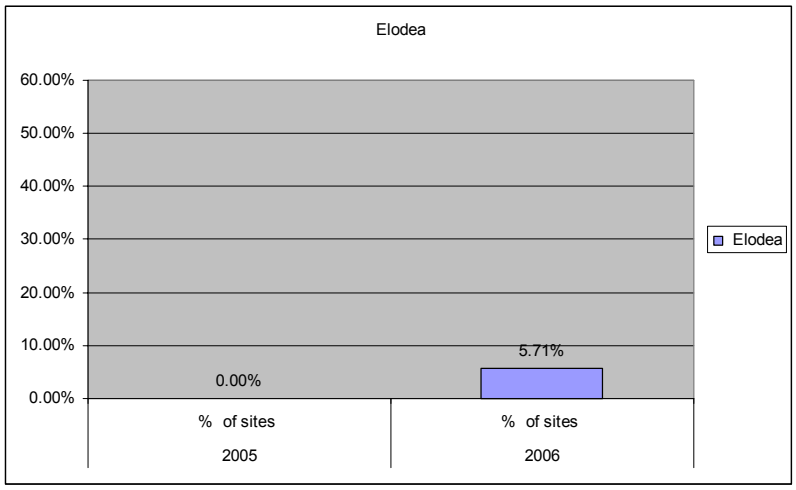


Fig. 17 Percent of sites with Elodea, August 2005 & 2006

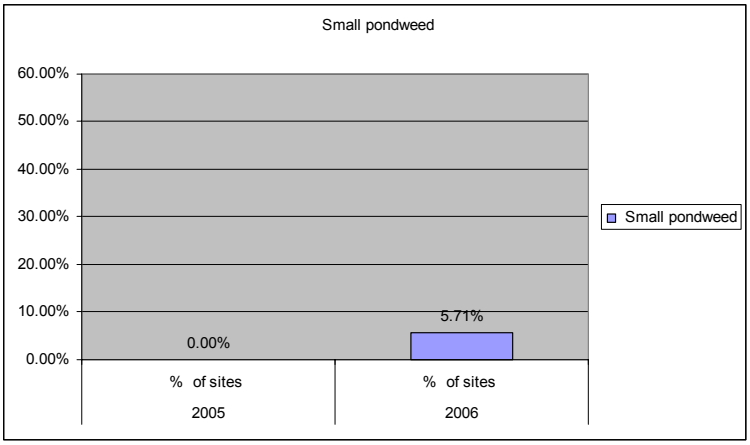


Fig. 18 Percent of sites with Small pondweed, August 2005 & 2006

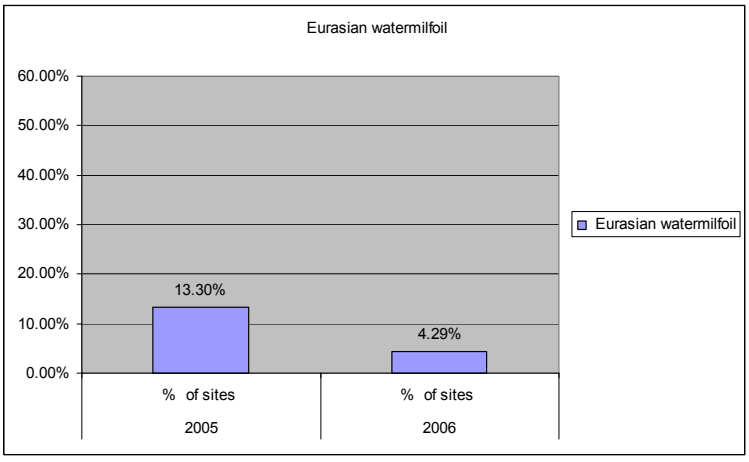


Fig. 19 Percent of sites with Eurasian watermilfoil, August 2005 & 2006

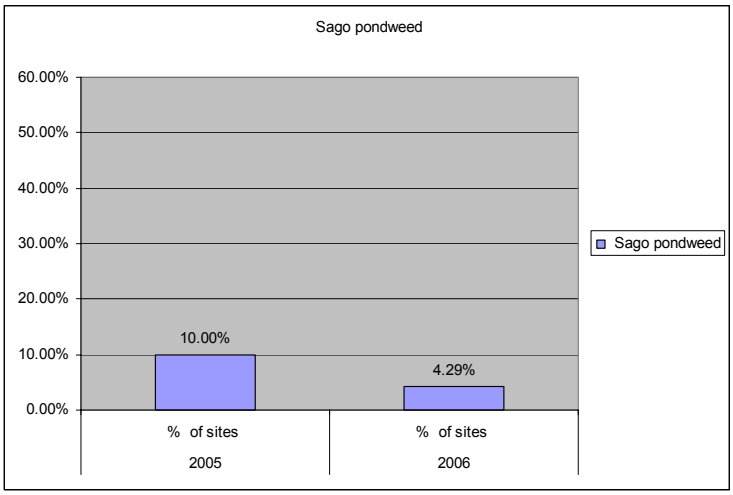


Fig. 20 Percent of sites with Sago pondweed, August 2005 & 2006

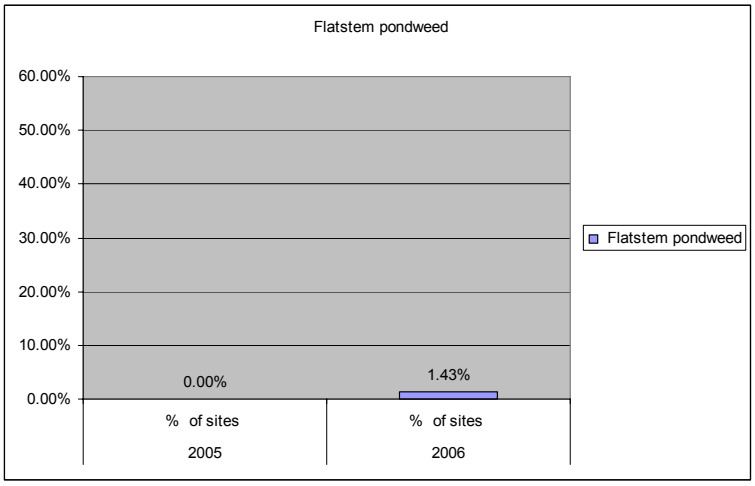


Fig. 21 Percent of sites with Flatstem pondweed, August 2005 & 2006

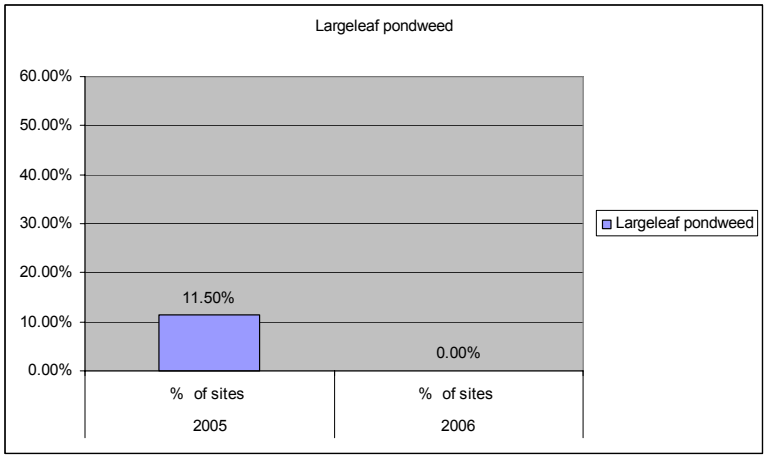


Fig. 22 Percent of sites with Largeleaf pondweed, August 2005 & 2006

Jimmerson Lake 8/9/06, 9/11/06	Contour
	0-5.9

Descriptor

Sampling sites	17
Total number of species	11
Total number of native species	10
Mean number of species per site	3.18
Species diversity index (SDI), 0-1 scale,	0.85
Aquatic Vegetation % Frequency of Occurrence	100.00

Table 8 Plant community descriptors for the 0-5.9 foot depth contours, 2006

Depth Contour (ft) 0-5.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil	1	5.88	1.00	0.06
Variable pondweed	2	11.76	1.00	0.12
Chara	12	70.59	4.17	2.94
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass	11	64.71	2.09	1.35
Illinois pondweed	6	35.29	3.00	1.06
Curlyleaf pondweed				
Sago pondweed	2	11.76	1.00	0.12
Elodea, Common waterweed	1	5.88	1.00	0.06
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	8	47.06	3.25	1.53
Small pondweed				
Robbins pondweed				
Coontail				
Great bladderwort	7	41.18	2.14	0.88
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	3	17.65	1.67	0.29
Spiny naiad	1	5.88	5.00	0.29

Table 9 Species descriptors for the 0-5.9 foot depth contours, 2006

for comparison with 21 other
Northern Indiana Lakes (Pearson 04)
(submersed species only, fil. algae excluded)
Descriptor

Sampling sites	15
Total number of species	10
Total number of native species	10
Mean number of species per site	3.60
Species diversity index (SDI), 0-1 scale,	0.87
Aquatic Vegetation % Frequency of Occurrence	100.00

Table 10 Plant community descriptors for the 6-10.9 foot depth contours, 2006

Depth Contour (ft) 6-10.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil				
Variable pondweed	4	26.67	2.00	0.53
Chara	9	60.00	1.89	1.13
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass	11	73.33	2.45	1.80
Illinois pondweed	4	26.67	2.00	0.53
Curlyleaf pondweed				
Sago pondweed				
Elodea, Common waterweed	1	6.67	1.00	0.07
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	9	60.00	3.67	2.20
Small pondweed	3	20.00	1.00	0.20
Robbins pondweed				
Coontail				
Great bladderwort	7	46.67	2.14	1.00
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	3	20.00	1.00	0.20
Spiny naiad	3	20.00	2.33	0.47

Table 11 Species descriptors for the 6-10.9 foot depth contours

Jimmerson Lake 8/9/06, 9/11/06	Contour (ft)
	11-15.9

for comparison with 21 other
Northern Indiana Lakes (Pearson 04)
(submersed species only, fil. algae excluded)

Descriptor	
Sampling sites	14
Total number of species	10
Total number of native species	10
Mean number of species per site	2.14
Species diversity index (SDI), 0-1 scale,	0.81
Aquatic Vegetation % Frequency of Occurrence	100.00

Table 12 Plant community descriptors for the 11-15.9 foot depth contours, 2006

Depth Contour (ft) 11-15.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil				
Variable pondweed	1	7.14	1.00	0.07
Chara	4	28.57	1.50	0.43
Flatstem pondweed	1	7.14	1.00	0.07
Whitestem pondweed				
Vallisneria, Tapegrass	6	42.86	2.00	0.86
Illinois pondweed				
Curlyleaf pondweed				
Sago pondweed	1	7.14	1.00	0.07
Elodea, Common waterweed				
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	10	71.43	4.40	3.14
Small pondweed				
Robbins pondweed				
Coontail	2	14.29	3.00	0.43
Great bladderwort	3	21.43	1.67	0.36
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	1	7.14	1.00	0.07
Spiny naiad	1	7.14	5.00	0.36

Table 13 Species descriptors for the 11-15.9 foot depth contours, 2006

Jimmerson Lake 8/9/06, 9/11/06	Contour (ft)
	16-20.9

for comparison with 21 other
Northern Indiana Lakes (Pearson 04)
(submersed species only, fil. algae excluded)

Descriptor	
Sampling sites	14
Total number of species	8
Total number of native species	7
Mean number of species per site	1.50
Species diversity index (SDI), 0-1 scale,	0.81
Aquatic Vegetation % Frequency of Occurrence	78.57

Table 14 Plant community descriptors for the 16-20.9 foot depth contours

Depth Contour (ft) 16-20.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil	2	14.29	3.50	0.50
Variable pondweed				
Chara	7	50.00	2.43	1.21
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass	1	7.14	1.00	0.07
Illinois pondweed				
Curlyleaf pondweed				
Sago pondweed				
Elodea, Common waterweed	2	14.29	1.00	0.14
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	4	28.57	4.00	1.14
Small pondweed	1	7.14	3.00	0.21
Robbins pondweed				
Coontail	3	21.43	3.00	0.64
Great bladderwort	1	7.14	1.00	0.07
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad				
Spiny naiad				

Table 15 Species descriptors for the 16-20.9 foot depth contours

Jimmerson Lake 8/9/06, 9/11/06		Contour (ft)
for comparison with 21 other Northern Indiana Lakes (Pearson 04) (submersed species only, fil. algae excluded)		21-25
Descriptor		
Sampling sites	10	
Total number of species	8	
Total number of native species	7	
Mean number of species per site	1.30	
Species diversity index (SDI), 0-1 scale,	0.56	
Aquatic Vegetation % Frequency of Occurrence	80.00	

Table 16 Plant community descriptors for the the 21-25 foot depth contours, 2006

Depth Contour (ft) 21-25

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil				
Variable pondweed				
Chara	7	70.00	3.29	2.30
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass				
Illinois pondweed				
Curlyleaf pondweed				
Sago pondweed				
Elodea, Common waterweed				
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	5	50.00	2.20	1.10
Small pondweed				
Robbins pondweed				
Coontail	1	10.00	1.00	0.10
Great bladderwort				
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad				
Spiny naiad				

Table 17 Species descriptors for the 21-25 foot depth contours, 2006

Fig. 23 Tier II Sampling points for Jimmerson Lake 2006

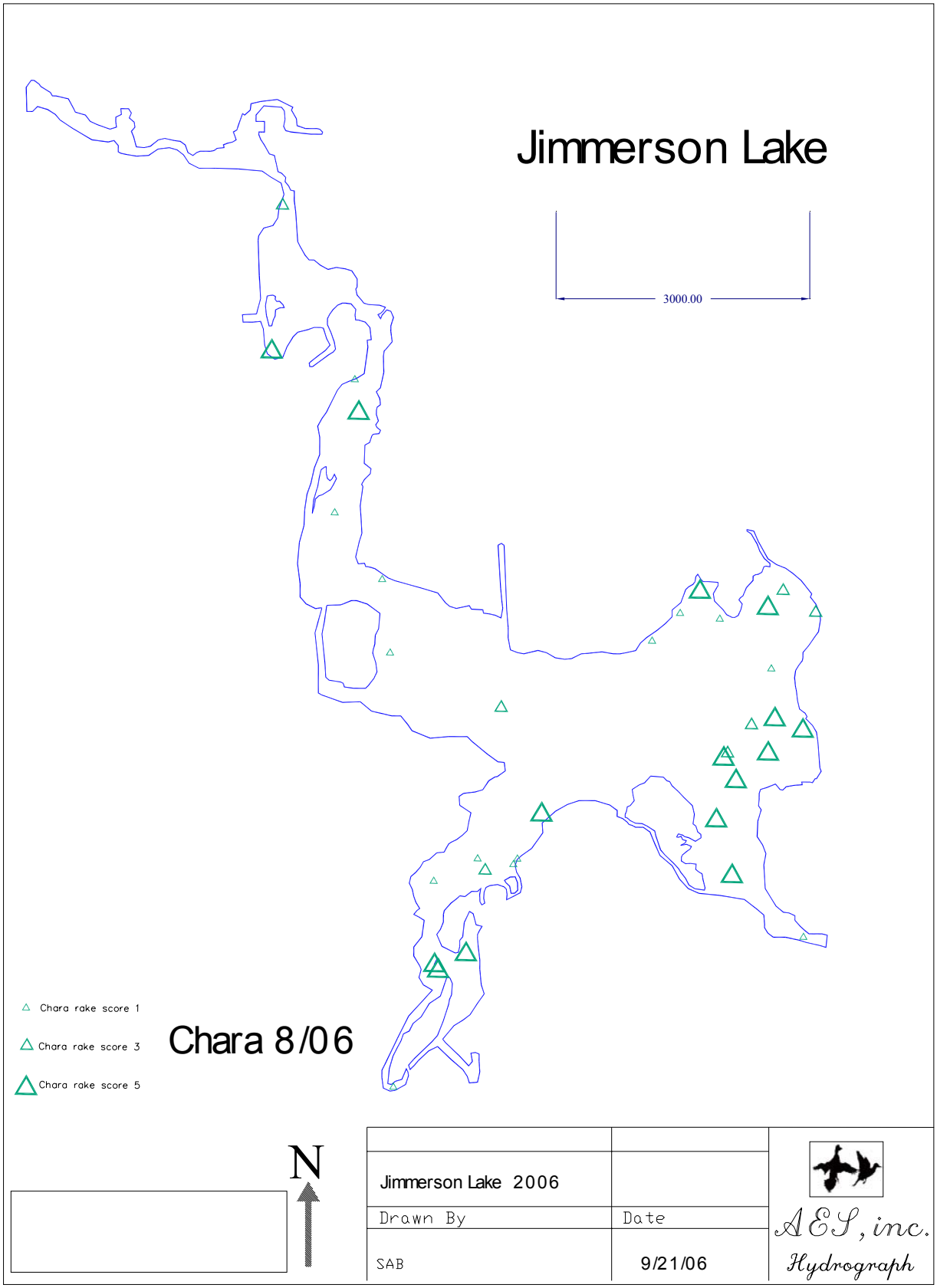


Fig. 24 Locations of Chara in Tier II sampling 2006

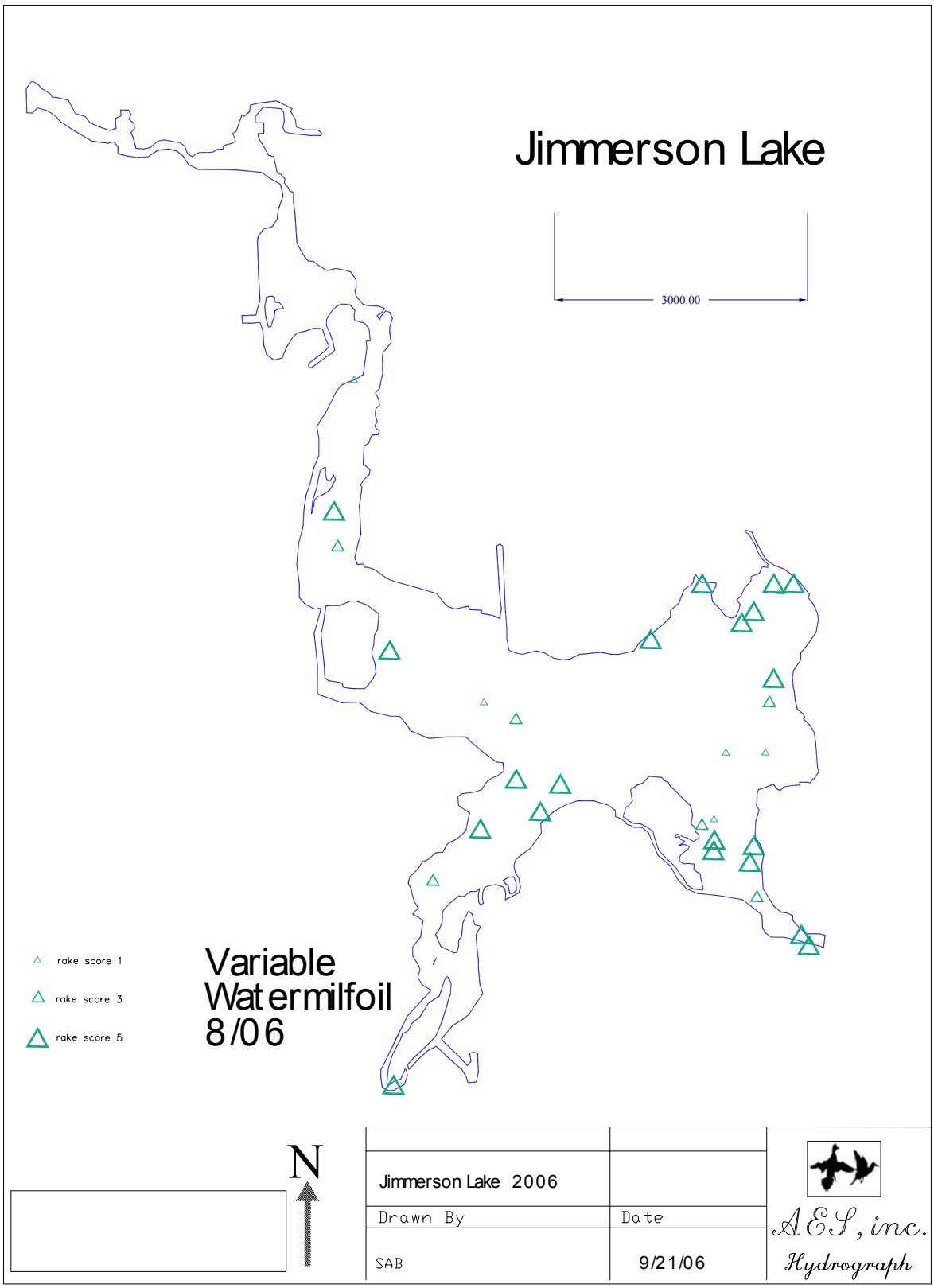


Fig. 25 Locations of Variable watermilfoil in Tier II sampling 2006

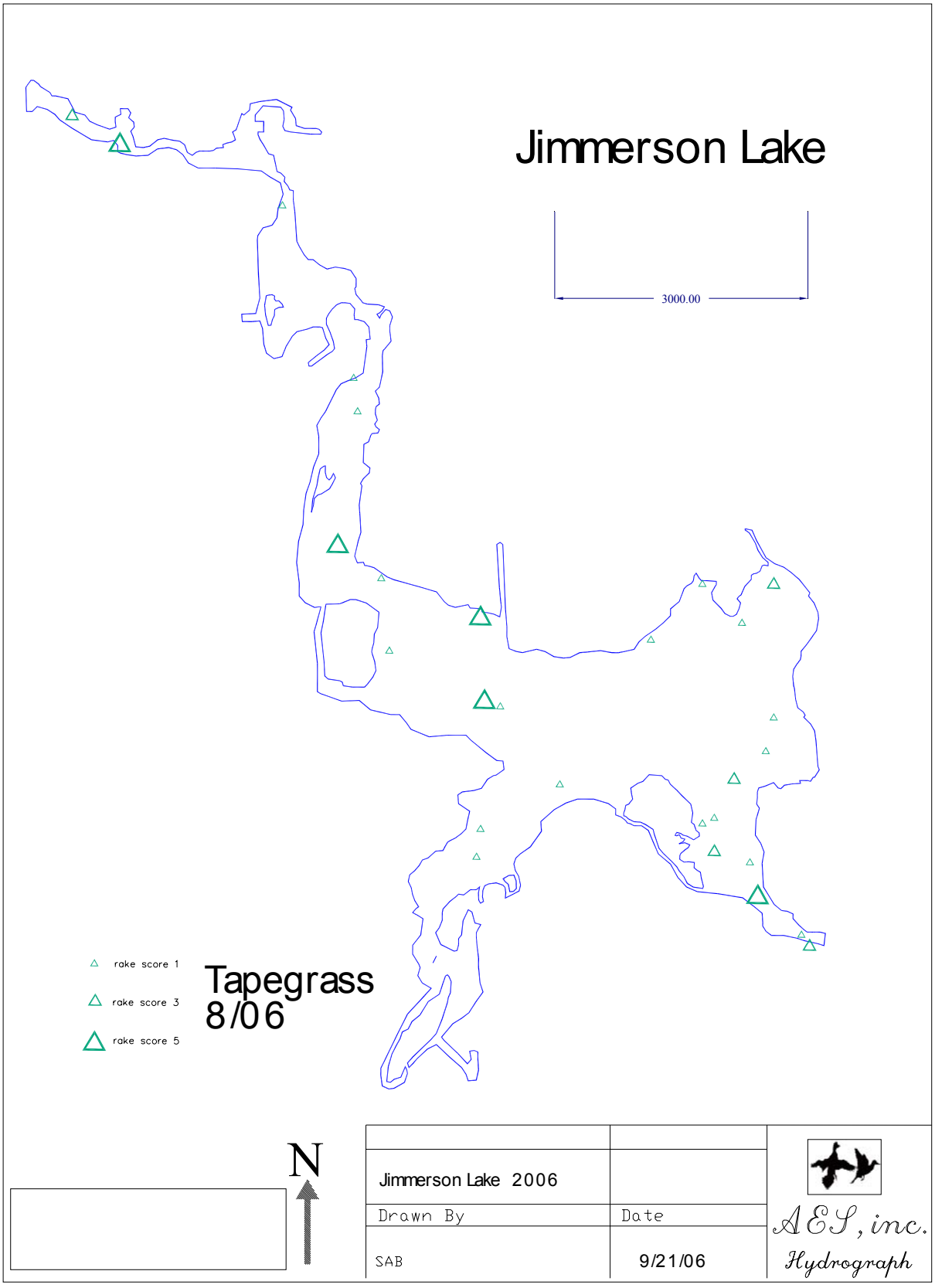


Fig. 26 Locations of Tapegrass in Tier II sampling 2006

9.0 Aquatic Vegetation Management Alternatives

No new applicable plant management alternatives are available at this time. New alternative selective herbicides may be released to the market and prove efficacious in the near future and will be evaluated for use on Jimmerson Lake at that time.

10.0 Public Involvement

A public meeting for Jimmerson Lake was held on 8/12/06 at the Sunset Grill in Angola, Indiana. Approximately 40 people were in attendance. Information was presented by Aquatic Enhancement & Survey, Inc. and Tony Cunningham of Weed Patrol, Inc. who performed the aquatic pesticide applications on Jimmerson Lake in 2006. A discussion was held about the status and goals of the Jimmerson Lake Plant Management Plan and opportunity was provided for lake residents to ask questions and provide input regarding the plant management and water-use restrictions involved. A Eurasian watermilfoil plant and Variable watermilfoil plant were passed around the room to improve the ability of lake residents to identify and recognize them. The Lake Use Survey below (Fig. 27) was distributed to those present, filled out, and collected. 25 surveys (one per household) were returned. Results are tabulated in table 18 below. Survey respondents were all lake property owners and association members. Nearly all had owned property at the lake for more than ten years. When asked to mark lake activities engaged in often 24 reported boating, 20 reported swimming, 16 reported skiing/tubing, 15 reported fishing, and 12 reported lawn irrigation. Twenty three of the 25 respondents reported that they had aquatic plants along their shoreline in nuisance quantities. Only two did not. Nine of the respondents reported owning property on one of the lake's channels while 16 indicated they had lakeshore property and one had neither. Eleven respondents felt that aquatic vegetation did affect the value of their property, while only two felt that it did not. Twenty four of 25 were in favor of continued efforts to control vegetation, one did not answer. Twenty four of 25 were also in favor of "increased" control of vegetation on the lake, one did not answer. Twenty four reported that they understood that LARE funding would only assist with the control of exotic plants; one did not answer this question. When asked to choose from a list of other possible problems at the lake 20 marked "Canada geese", 18 indicated "too many plants", 16 indicated "too many boats accessing lake", 15 indicated "pier/funneling problem", 14 marked "additional speed limits/no wake zones needed", five marked "dredging needed", and one marked "not enough plants" as a problem. It was specified by two respondents that new speed restrictions were not needed, but the existing ones needed better enforcement. When invited to write-in further comments one respondent suggested the establishment of daytime fast boating hours and an evening slow period for fishing hours. One resident complained about "drop in" boaters and others running at speed inside the buoys. Overall the Jimmerson Lake users feel that they have a problem with aquatic plants and are in favor of increased control. There also seems to be a clear sentiment that additional enforcement of existing boating regulations is needed but there does not appear to be a great deal of sentiment toward further restricting speed limits and no wake zones.

Lake User Survey Jimmerson Lake 8/12/06

1. Are you a lake property owner? Yes X No_____

2. Are you currently a member of your lake association? Yes X No___

3. How many years have you been at the lake? (circle one) 2 or less,
2 – 5 years
5-10 years
Over 10 years

4. How do you use the lake (mark all that apply)
___Swimming ___Irrigation (including lawn) _____Waterfowl hunting
X Boating X Fishing ___Skiing/Tubing

Other _____

5. Do you have aquatic plants at your shoreline in nuisance quantities? Yes X No ___

6. Do you own or occupy property on a _____channel ___X Lakeshore_____Neither

7. Does the level of vegetation in the lake affect your property values? Yes X No ___

8. Are you in favor of continuing efforts to control vegetation on the lake? Yes X
No ___

9. Are you in favor of increasing efforts to control vegetation on the lake? Yes X
No ___

10. Are you aware that the LARE funds will only apply to work controlling invasive exotic species, and more work may need to be privately funded? Yes X No ___

11. Mark any of these you think are problems on your lake:
X Too much boat traffic
___ Too much fishing
X Canada Geese
___ Dredging needed
___ Too many aquatic plants
___ Not enough aquatic plants
___ Poor water quality
X Pier/funneling problem !!!
___ Additional Speed limits/ no wake zones needed (just obey the ones that are in place).

Please add any comments on the back:

X Check here if commenting on the back

Fig. 27 Jimmerson Lake user survey for 2006

Lake Property Owner?	Yes	No				
	25					
Are you an association member?	Yes	No				
	25					
Years at the lake?	2 or less	two to five	five to ten	Over 10		
		1	2	22		
How do you use the lake?	Swim	Irrigation	Waterfowl	Boating	Fishing	Ski/Tube
	20	12		24	15	16
						Other
Do you have nuisance plants?	Yes	No				bioenhancement
	23	2				
Do you own property on	Channel	Lakeshore	Neither			
	9	16	1			
Does the lake vegetation affect	Yes	No				
your property value?	11	5				
Are you in favor of continued	Yes	No				
Vegetation control?	24					
Are you in favor of increased vegetation control?	Yes	No				
	24					
Are you aware that LARE funds will	Yes	No				
only apply to exotics?	24					
Mark other lake problems	Too many boats accessing		Too much fishing	Canada Geese	Dredging needed	
	16		0	20	5	
	Too many plants		Not enough plants		Poor water quality	
	18		1		3	
	Need more speed control		Pier/Funneling problem			
Add any comments	14		15			
Need to enforce speed rules in place (2)						
Establish speed/fishing hours						
“drop in” boaters and skiers running inside buoys						

Table 18 Jimmerson Lake 2006 Lake user survey results

11.0 Public Education

Residents and users who attended the meeting seemed to understand the potential for recreational and ecological impairment at Jimmerson Lake if Eurasian watermilfoil is allowed to increase its colonization of the lake. At present frustration exists over the amount of native plants in the lake so any worsening of the situation is not looked upon lightly. The issue of controlling Purple loosestrife and other invasive wetland plants has also been addressed at the meetings and these efforts should continue in 2007. It may be wise to stress the possibility of watercraft spreading the milfoil plants or introducing new invasive plants to the lake. The clear posting of invasive species information at the private accesses at Jimmerson Lake or a basic screening process for launching watercraft may be steps to consider toward helping protect the lake's exceptionally diverse plant community.

11.1 Hydrilla and it's implications for Jimmerson Lake

Keeping lake residents and users aware of the possibility of bringing in new invasive species on watercraft trailers will be especially important now that Hydrilla has been found in Indiana. Hydrilla *Hydrilla verticillata* is an invasive submersed aquatic plant thought to be native to Africa, Australia, and parts of Asia. As a hearty growing plant Hydrilla was used in aquariums and this led to its introduction into Florida waters in 1960. Since then Hydrilla has spread to become the single most problematic plant in the United States. (See USGS map below) In Florida alone millions are spent in controlling the growth of Hydrilla each year. The potential exists for the same type of damage on

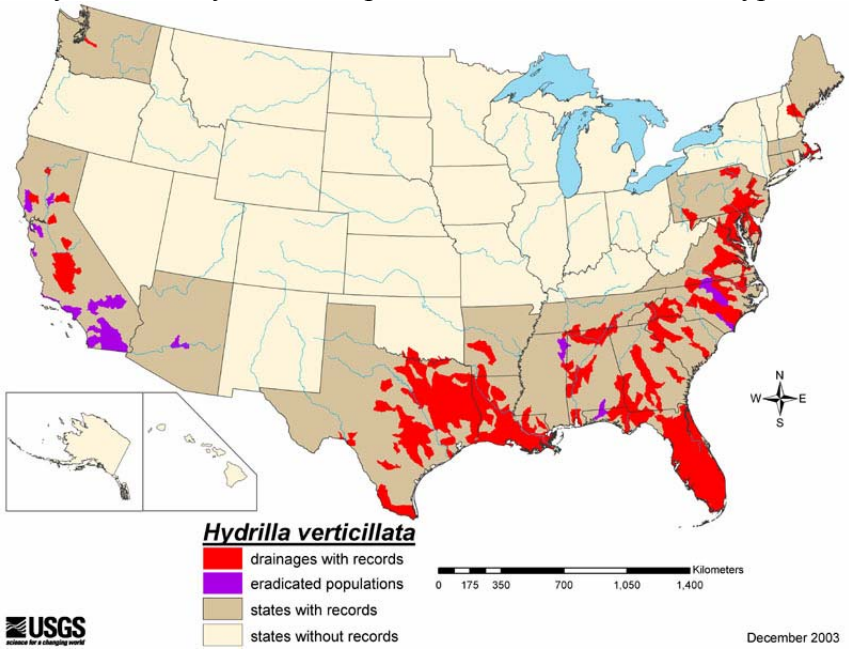


Fig. 28 Known occurrences of Hydrilla in the U.S. in 2003. From the USGS website, http://nas.er.usgs.gov/taxgroup/plants/docs/hy_verti.html

Indiana waterways if Hydrilla is allowed to spread. Like many invasive aquatic plants Hydrilla can form dense surface mats depriving native plant communities of light, decreasing plant community diversity, and causing serious impairment of recreational activities including fishing, swimming, and boating.

Fig. 29 Hydrilla mats clog the surface of Lake Conroe Texas. Photo courtesy of Earl Chilton, Texas Parks and Wildlife Department

Hydrilla can spread by fragmentation or the production of seeds, tubers (root structures), or turions (seed-like plant buds). Because of the potential for spread through fragmentation, plant material hitching a ride on watercraft trailers is probably a major mechanism of introduction. Tubers and turions can be very hearty, surviving dry periods or herbicide treatments and remaining hidden in the lake bottom for extended periods of time. Because of these characteristics great ecological damage and recreational impairment can occur in watersheds colonized by Hydrilla. In 2006 Hydrilla was discovered in Lake Manitou and its outlet stream in Rochester Indiana (Fulton County). This is the first known occurrence of this plant in the Midwest. The Indiana Department of Natural Resources has devised a plan for eradicating and controlling the Hydrilla to prevent spread to other water bodies. Checks of other lakes in close proximity to Lake Manitou have not located any Hydrilla, so it is possible that the plant is only in and immediately downstream of Lake Manitou at this time. However, it's also possible that other lakes contain young Hydrilla infestations that have yet to be recognized so it's important that associations and lake residents learn to identify this plant. Acting early in spotting Hydrilla can help prevent spread and ultimately save a huge cost to the ecology and recreational value of Indiana lakes. At some point other infestations may occur as a result of plants being transported to Indiana from out-of-state. Whereas Jimmerson and the James Chain of Lakes in general are popular boating and sportfishing destinations, there is a definite possibility that this plant could appear in Jimmerson Lake in the future. Information on Hydrilla identification should be presented to the Jimmerson Lake users at meetings as a regular part of the lake resident educational program.

Fig. 30 Hydrilla is similar in appearance to the native plant Elodea and also Brazilian elodea, an exotic (also recently found in Indiana). It forms long stems containing many whorls of short leaves. Photo Courtesy of Dr. John H. Rodgers, Jr.

11.1.1 Hydrilla Identification

Hydrilla strongly resembles the native aquatic plant Elodea *Elodea canadensis* and the introduced species Brazilian elodea *Egeria Densa.* Both these species can be found in Indiana although the occurrence of Brazilian elodea has been very limited thus far. Native Elodea is a part of the Jimmerson Lake plant community. Hydrilla is a long slender plant that sometimes branches and has short leaves arranged around the stem in a star-like (whorled) pattern. Characteristics which differentiate Hydrilla from Elodea and Brazilian Elodea include a typical leaf count of five in the whorl. Brazillian elodea typically has four to six leaves but never three, and native Elodea usually has three. (fig 31) Small teeth are also present on the midrib of Hydrilla leaves and may give the plant a "rough" feel. Hydrilla also has small serrations along the leaf edges (fig 32). Another distinguishing characteristic of Hydrilla is the presence of tubers (.2 to .4 inch long off-white structures attached to the root) (fig 33).

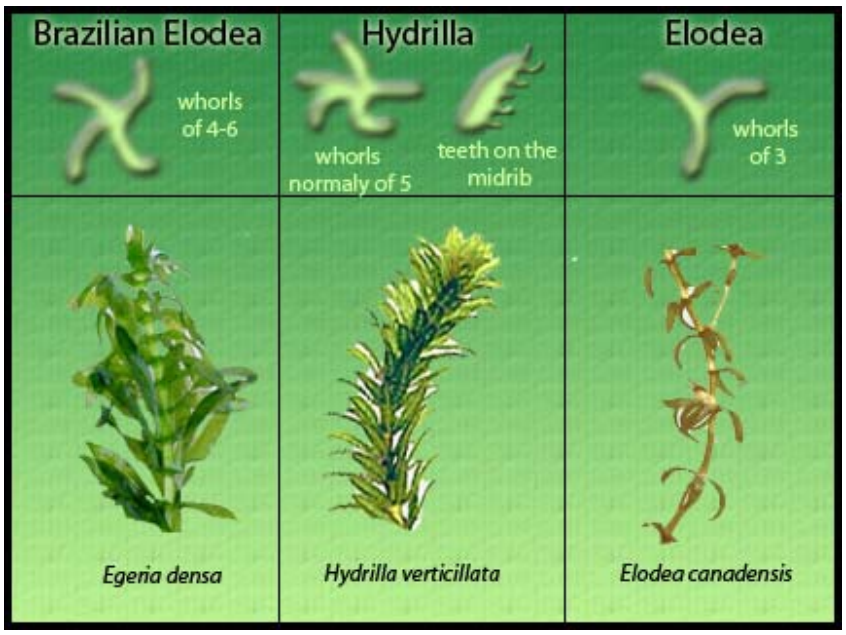


Fig. 31 Brazilian elodea has a typical leaf count of 4-6, while Hydrilla's is usually 5, and Elodea's 3. Drawing courtesy of Rob Nelson at ExploreBiodiversity.com

Fig. 32 Edges of Hydrilla leaves have fine serrations visible upon close examination. Photo Courtesy of Dr. John H. Rodgers, Jr.

Fig. 33 Hydrilla plants with tubers attached. Photo courtesy of King County Natural Resources and Parks, Water and Land Resources Division.

Anyone noting the presence of Hydrilla or Brazilian elodea is asked to immediately contact Doug Keller, Invasive species coordinator for the Indiana Department of Natural Resources at 317-234-3883, email: **dkeller@dnr.in.gov**. If you have questions about the identity of aquatic plants found, photos of the plants can be e-mailed to Doug for basic identification to determine if further action is required. More information on stopping the spread of invasive aquatic species is available online at **http://www.protectyourwaters.net/**

12.0 Integrated Management Action Strategy

Based on the value of Jimmerson Lake as a unique public resource with three RTE species present in its plant community and the overwhelming desire by its users to continue to control the lake's emerging Eurasian milfoil problem, it's recommended that the 2006 season's management regime be repeated in 2007, but supplemented with repeated treatments in areas of Eurasian watermilfoil regrowth. This includes the treatment of up to 17 acres of dense Eurasian watermilfoil growth with 2, 4-D granular aquatic herbicide. A single retreatment of up to 17 acres should be planned in case the initial treatment does not have a lasting effect as was noted during the 2006 season. Monitoring and aquatic plant surveys per the 2007 IDNR protocol should be used to evaluate changes in the lake's plant community and treatment effectiveness. To alleviate persistent problems with nuisance native aquatic plants the Association may wish to consider a regime of repeated treatments in developed shoreline areas. An estimate is included in Section 13 of this report. This should be combined with basic rake-toss monitoring and resident surveys in native-plant treatment areas to produce some objective measures of treatment effectiveness. Jimmerson Lake's aquatic plant

community is so diverse that virtually any legal regime of aquatic pesticide applications is unlikely to destructively deplete the plant community of biomass or stability. Part of the Jimmerson Lake resident's frustration with excessive native plant growth (especially Variable watermilfoil) is likely the result of a naturally luxuriant plant community that has been amplified by enhanced spread through fragments mobilized by watercraft. The Jimmerson Lake Association and Weed Patrol, Inc. have been working to reduce native milfoils in certain high traffic areas to help alleviate this problem. A further increase in control of native milfoil in high traffic areas may help to reduce the number of free-floating plant fragments, but shoreline prop-cut vegetation will always be a problem to some extent at Jimmerson Lake. At least one public meeting should be dedicated each season to helping educate the lake residents about proper practices in managing their own lakeside properties. This will also allow for the collection of ideas and opinions from lake users and the general public. Because extensive colonization of Jimmerson Lake's riparian wetlands by Purple loosestrife has implications for water quality, a basic survey should be planned in 2007 to evaluate the colonization of shoreline and riparian wetlands by Purple Loosestrife. This survey should be designed to evaluate the feasibility of a lake-wide control program for this invasive plant. Resident's should be reminded to take basic efforts to control these plants along their own shoreline.

13.0 Estimated Project Budget and Timeline

2007 Non-native Plant Management

- May 2007 Map Exotic Plants and Designate Treatment areas
$1000.00

-Mid to late May 2007 2-4-D Eurasian watermilfoil treatment to designated areas maximum 17 acres
$7140.00

-June 2007 hold public meeting to discuss plan with community and lake users
$200.00

-July 2007 Tier II Plant Survey, Designate any retreatment areas
$1200.00

-July 2007 Basic shoreline survey of Purple loosestrife
$500.00

-July 2007 2-4-D Eurasian watermilfoil treatment to designated areas of re-growth, maximum 17 acres
$7140.00

-November 2007 AVMP document preparation
$900.00

2007 Total $18080.00

2007 Native Plant Management

-May/June, and July 2007 Perform one pre-treatment rake toss per 400 feet of native-plant-treatment shoreline to document pre-treatment plants present. Repeat on selected untreated control shoreline. Perform two Treatments of approx. 26388 feet of developed shoreline for several native and exotic plant species. (Initial treatment in May or June, followed by a second treatment in July)
$36,943.00.

-May or June 2007 Treatment of 12.7 acres of Variable watermilfoil with 2,4-D granular to reduce plants in high traffic boating areas.
$5334.00

-August or September 2007 Collect written surveys from one resident per 400 feet of treated shoreline to collect opinions about treatment effectiveness and perform one post-treatment rake toss per 400 feet to collect post treatment data. Repeat rake tosses on untreated control shoreline.
(Included in treatment cost)

-October 2007 present monitoring results to Weed Control Committee. (Also to be included in LARE documents)
(Included in treatment cost)

14.0 References Cited

Pearson, J. 2004, A sampling method to assess occurrence, abundance and distribution

of submersed aquatic plants in Indiana lakes, Indiana Department of Natural Resources, Division of Fish and Wildlife, Tri-Lakes Fisheries Station, 5570 North Hatchery Road Columbia City, Indiana 46725

IDNR 2004. Procedure manual for surveying aquatic egetation: Tier I and Tier II, Indiana Department of Natural Resources, Indianapolis, Indiana.

Weed Patrol, Inc. 2006. Jimmerson Lake Integrated Aquatic Plant Management Plan 2006-2009. Weed Patrol, Inc. 1922 Fieldhouse, Ave., Elkhart, IN 46517

15.0 Appendices

Appendix A Tier I Data Sheets 5/06

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 5/31/06

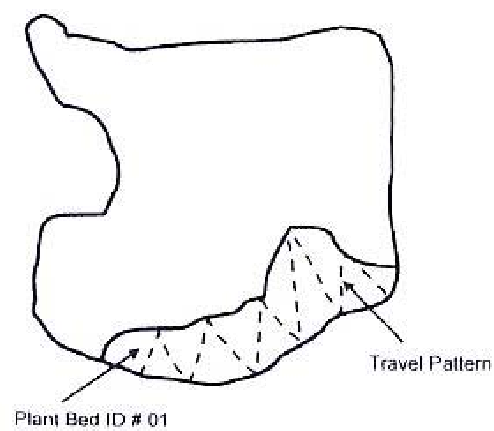
SITE INFORMATION		SITE COORDINATES
Plant Bed ID: 1	Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~	Center of the Bed
Bed Size:		Latitude:
Substrate: 2	Waterbody ID:	Longitude:
Marl? 0	Total # of Species	Max. Lakeward Extent of Bed
High Organic? 1	Canopy Abundance at Site: S: 1, N: , F: , E: 4	Latitude:
		Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	2			
POIL ✓	2			
POCR 3 ✓	2			
MYSP 2 ✓	2			
POGR ✓	2			
PORI ✓	2			
UTMA				
NAFL				
PUPR 5 ✓	2			
MYVE				
POPE 6				
POZO ✓	1			
CEDE ✓	1			
POAM ✓	3			
SC SP.				
LYSA				
NYTU ✓	3			
SA SP. ✓	2			
ARVM				
NULU ✓	3			
TYLA ✓	2			
TYAN				

MYHE ✓ 3; ELCA ✓ 2; ?HORNED ✓ 2; VAAM ✓ 1; [illegible] ✓ 1; SA sp. FORMA IN. ✓ 2; SWAMP LOOSESTRIFE ✓ 1; BLUE FLG IRIS ✓ 1

Individual Plant Bed Survey



Comments:

WPT. 51 MYSP HOTSPOT
41° 43.37 N
85° 4.37 W
WPT 52 MYSP HEAVY WITH MYHE THIS STRETCH
41° 43:
85° 48.

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspt
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 5/31/06

SITE INFORMATION

Plant Bed ID: 2

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: 1 N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

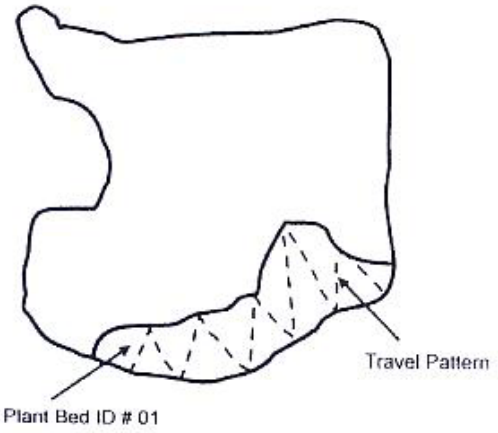
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARA ✓	3			
POIL ✓	2			
POCR3 ✓	2			
MYSP 2 ✓	2			
POGR ✓	2			
PORI ✓	1			
UTMA				
NAFL				
POPR 5 ✓	2			
MYVE				
POPE6 ✓	1			
POZO ✓	2			
CEDE				
POAM ✓	2			
SCSP. ✓	2			
LYSA				
NYTU ✓	3			
SA SP. ✓	2			
ARVM				
NYLU ✓	3			
TYLA ✓	2			
TYAN				

MYHE ✓ 2
HORNED ✓ 2
POPU ✓ 1
ELCA ✓ 1
POCA ✓ 2
SWAMP LOOSESTRIFE 2
YELLOW FLAG IRIS 1

Individual Plant Bed Survey



Comments:

* INPT 49 EWM HOTSPOT
41° 43.24N
85° 4.30W
* INPT 50 EWM HOTSPOT "L" CHANNEL 41° 43.04N
85° 4.18W

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 3

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S:	N:	F:	E:
			1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

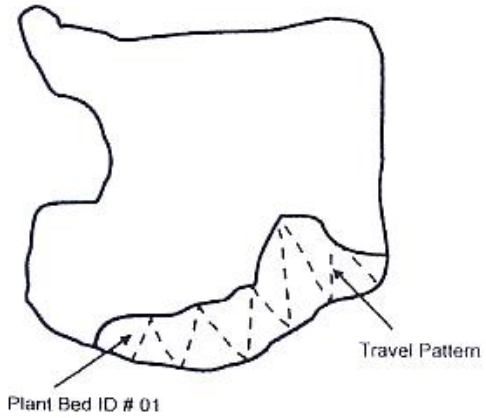
PORO 1
ELCA 2
MYHE 3
HYMED 2

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR	3			
POIL	2			
POCR3	2			
MYSP 2	2			
POGR	2			
PORI	2			
UTMA				
NAFL				
POPR 5	2			
MYVE				
POPE6	1			
POZO	2			
CEDE				
POAM	2			
SCSP.	2			
LYSA				
NYTU	2			
SA SP.	1			
ARUM				
NULU				
TYLA	1			
TYAN				

SPIKE RUSH 2
YELLOW FLAG 1
IRIS
HYBRS 1

Individual Plant Bed Survey



Comments:

SOME MYSP BEHIND WETLAND ISLAND (@ PARADISE VIEW)

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspc
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 & 5/31/06

SITE INFORMATION

Plant Bed ID: 4

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

CanopyAbundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

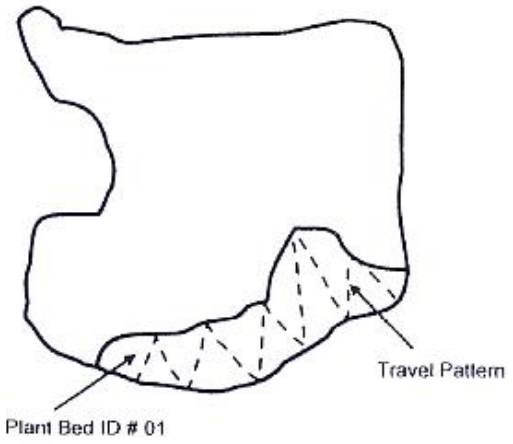
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR				
POIL				
POCR3 ✓	3			
MYSP 2 ✓	2			
POGR				
PORI				
UTMA				
NAFL				
POPR5 ✓	2			
MYVE				
POPEG ✓	1			
POZO ✓	2			
CEDE				
POAM ✓	3			
SCSP. ✓	2			
LYSA				
NYTU ✓	2			
SA SP ✓	2			
ARUM				
NULU ✓	3			
TYLA ✓	2			
TYAN				

ELCA ✓ 2
MYHE ✓ 2
POCH ✓ 2
CAREX SP. ✓ 2
WATERSHIELD 2
PEL FLO ✓ 1
IRIS

Individual Plant Bed Survey



Comments: CHANNEL BEHIND WETLAND
WPT 53 MYSP HOTSPOT
41° 42.50N
85° 84.21 W
SCATTER MYSP - SIGNIFICANT

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 & 5/31/06

SITE INFORMATION

Plant Bed ID: 5A

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 1/3

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

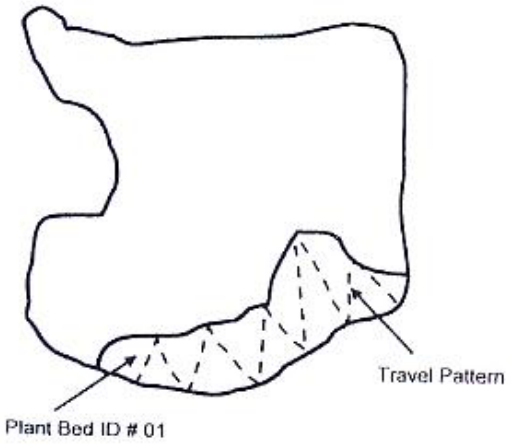
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	4			
POIL ✓	2			
POCR 3 ✓	2			
MYSP 2 ✓	2			
POGR				
PORI				
UTMA				
NAFL				
POPR 5				
MYVE				
POPE 6 ✓	2			
POZO ✓	2			
CEDE				
POAM				
SC SP.				
LYSA				
NYTU				
SA SP. ✓	2			
ARVM				
NULU				
TYLA				
TYAN				

PORO ✓ 2
ELCA ✓ 2
MYAE ✓ 3
POSP. ✓ VOUCHER REF. 5
U...D I.D. P.V.N.C.
SASP. FORMAL ✓ 2 IN.

Individual Plant Bed Survey



Comments:

MYSP HOTSPOT WPT 54
41° 42.44 N
85° 4.04 W

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
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Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 & 5/31/06

SITE INFORMATION

Plant Bed ID: JB

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 1/4

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

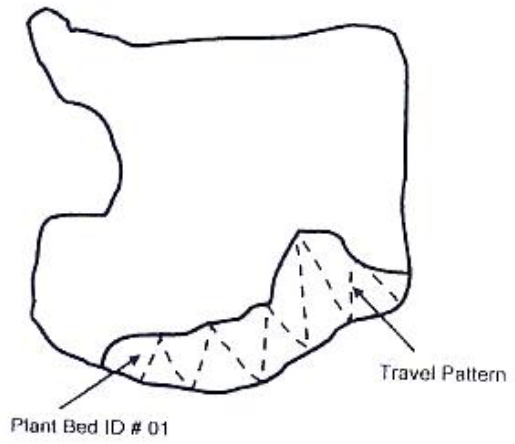
SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARV	4			
POILL	2			
POCR3				
MYSP 2				
POGRL	2			
PORI				
UTMAL	1			
NAFL				
POPR5				
MYVE				
POPE6	1			
POZO				
CEDE				
POAM				
SC SP.				
LYSA				
NYTU				
SA SP.				
ARUM				
NULU				
TYLA				
TYAN				

MYHEL 3

SA SP FORM 2 W. L

Individual Plant Bed Survey



Comments:

★

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 / 5/31/06

SITE INFORMATION

Plant Bed ID: 6

Bed Size:

Substrate: 3

Marl? 1

High Organic? 1

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Waterbody ID:

Total # of Species

Canopy Abundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

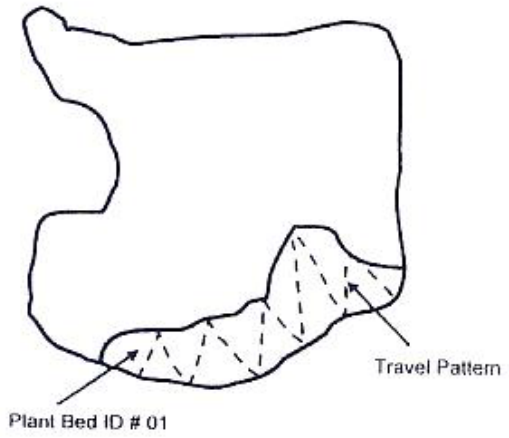
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARA ✓	4			
POIL ✓	2			
POCR3 ✓	2			
MYSP 2 ✓	2			
POGR ✓	2			
PORI				
UTMA				
NAFL				
POPR5				
MYVE				
POPE6 ✓	1			
POZO ✓	1			
CEDE				
POAM				
SCSP. ✓	2			
LYSA				
NYTU ✓	2			
SA SP. ✓	2			
ARVM				
NULU ✓	3			
TYLA ✓	2			
TYAN				

MYHE ✓ 3
ELCA ✓ 2
POPU ✓ 1
NEEDLE RUSH ✓ 2
POCH ✓ 2
CAREX SP. ✓ 2

Individual Plant Bed Survey



Comments:

CWT 55 MYSP HOTSPOT

41° 42.23N
85° 3.81W

(DOCKING AREA)
1/2 ACRE

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
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Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 5/31/06

SITE INFORMATION

Plant Bed ID: 7

Waterbody Name: JIMMERSON ~~WEST OTTER LAKE~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

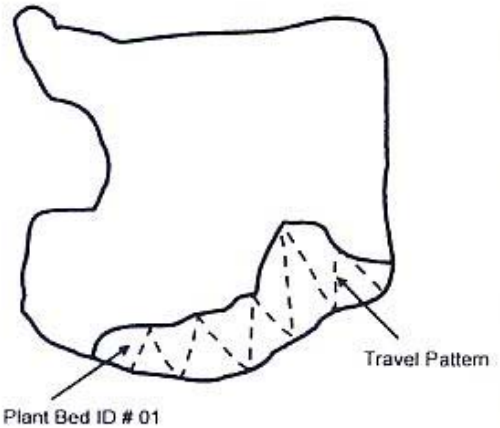
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARA ✓	3			
MYSP2 ✓	1			
MYHE ✓	3			
POIL				
POCR3 ✓	2			
ALGA				
POPR5				
UTMA ✓	1			
NAFL				
POPE6 ✓	2			
POZO ✓	2			
POBR ✓	2			
LELA ✓	2			
BA sp. (SUBM) ✓	1			
FLOATINGLEAF ✓	1			
LYSA				
NYTU ✓	2			
SACU ✓	2			
ARUM				
NULU ✓	2			
TYLA ✓	2			
TYAN				

Individual Plant Bed Survey



Comments:

CHANNEL

WPT 056 3FT DEPTH
41° 41.84 N
85° 3.94 W

EROSION ON EAST TIER (FENCING IN PLACE)

NOT SEEING LYTHRUM

~~VOUCHER~~ & MYSP. SP. ?

IS THIS MYRIOPHYLLUM SPICATUM ? ~~STEM IS MUCH WHITER - STIFFER FOLIAGE~~

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
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QE Code:
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1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
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1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: ~~5/15/06~~ 5/30,31/06

SITE INFORMATION

Plant Bed ID: 8

Waterbody Name: JIMMERSON ~~WEST OTTER LAKE~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 1

Total # of Species

High Organic?

CanopyAbundance at Site

S: 1 N: F: E: ~~2~~ 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	2			
MYHE ✓	2			
POIL ✓	2			
POCR3 ✓	2			
ALGA				
POPR5 ✓	2			
UTMA				
NAFL				
POPE6 ✓	2			
POGR ✓	2			
POZO ✓	1			
~~POPR ✓~~	~~2~~			
ELCA ✓	2			
WATER BUTTERCUP ✓	1			
LYSA ✓ 1				
NYTU				
SACU ✓ ~~2~~ 1				
ARUM				
NULU				
TYLA				
TYAN				

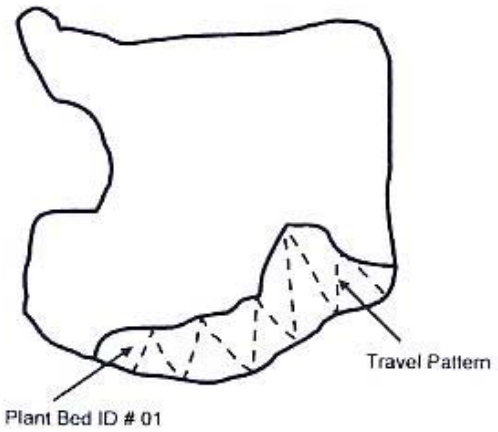
HORNED ✓ 1

HYBRIS ✓ 1

SC sp. ✓ 1

POCH ✓ 1

Individual Plant Bed Survey



Comments:

WPT 57 MYSP HOTSPOT 41° 42.05N 85° 83.71W

CHANNEL WITH TRAILERS

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 9

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: ~~CLAY~~ ~~PEAT~~ 1/2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

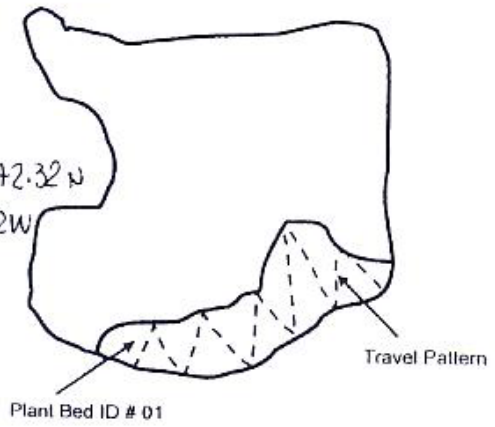
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARV	2			
POIL	2			
POCR3	2			
MYSP 2	2			
POGR	2			
PORI	1		2	3
UTMA				
NAFL				
POPR 5	2		2	2
MYVE				
POPE 6	1			
POZO	2			
CEDE	2			
POAM	1			
SCSP.	2			
LYSA				
NYTU				
SA SP.				
ARUM				
NULU	2			
TYLA	2			
TYAN				

VAAM 2
MYHE 2
ELCA 2
POPU 2

Individual Plant Bed Survey



Comments:

FLATS ARE SPARSE & PEATY OR SANDY - HEAVY WEEDLINE MOSTLY MYHE 15-3' SECCHI

~~BEDS~~ ON WPT- 39

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
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3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
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QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 10
Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~
Bed Size:
Substrate: 3
Waterbody ID:
Marl? 1
Total # of Species
High Organic? 0
CanopyAbundance at Site
S: N: F: E: 2

SITE COORDINATES

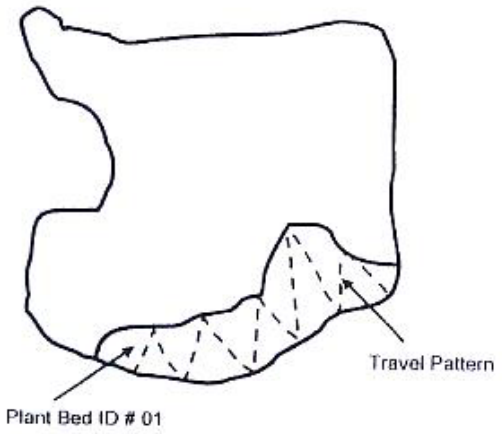
Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	2			
POIL ✓	2			
POCR 3 ✓	2			
MYSP 2 ✓	2			
POGR ✓	2			
PORI				
UTMA				
NAFL				
POPR 5 ✓	2		2	1
MYVE				
POPE 6 ✓	1			
POZO				
CEDE				
POAM ✓	1			
SC SP.				
LYSA				
NYTU ✓	2			
SA SP. ✓	2			
ARUM				
NULU ✓	2			
TYLA ✓	1			
TYAN				

ELCA ✓3
MYHE ✓3
POPU ✓1
HORNED ✓1
SA SP.
FORMA ✓2
INUNDATA
MEL
ZIG ✓1
IRIS

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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Abundance:
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Voucher:
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1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 10A

Bed Size:

Substrate: 2

Marl? 1

High Organic? 1

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Waterbody ID:

Total # of Species

Canopy Abundance at Site: S: N: F: E: 2

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

SPECIES INFORMATION

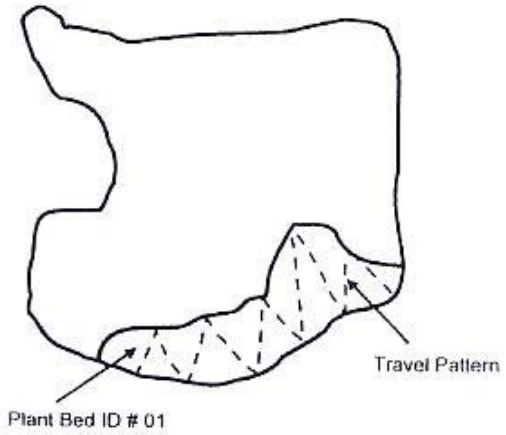
Species Code	Abundance	QE	Vchr.	Ref. ID
CHARA ✓	3			
POIL ✓	3			
POCR3 ✓	2			
MYSP2 ✓	2			
POGR				
PORI				
UTMA				
NAFL				
PUPR5 ✓	2			
MYVE				
POPE6 ✓	1			
POZO ✓	1			
CEDE				
POAM				
SCSP. ✓	2			
LYSA				
NYTU ✓	2			
SASP. ✓	2			
ARVM				
NYLU				
TYLA ✓	2			
TYAN				

MYHE ✓ 3
ELCA ✓ 2
HORMAD ✓ 2
POAU ✓ 1

YEL
FCL ✓ 2
IRIS

SA SP.
DECMA I. ✓ 2
HB ✓ 2
WAMPL. ✓ 2
LYSA 2

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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Abundance:
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QE Code:
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Voucher:
0 = Not Taken
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2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

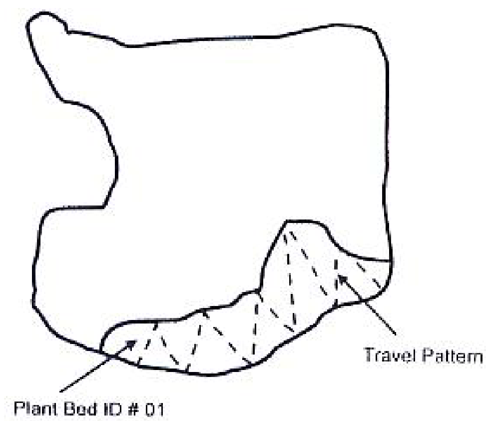
ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.		DATE: 5/30/06	
SITE INFORMATION		SITE COORDINATES	
Plant Bed ID: 11	Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~	Center of the Bed	
Bed Size:		Latitude:	
Substrate: 3	Waterbody ID:	Longitude:	
Marl?	Total # of Species	Max. Lakeward Extent of Bed	
High Organic?	Canopy Abundance at Site	Latitude:	
	S: N: F: E: 2	Longitude:	

SOFT ORGANIC SILT | SILT | W... ROSH ... 35' | ALSO JUST ... PORO 3 | ... 4 | ...ENT | 41°42.30N | 85° 3.01W | SAND W SILT | NEEDLE RUSH WET 3 | ~~...~~ 4

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ?AR ✓	2			
POIL ✓	1			
POCR3 ✓	2			
MYSP2 ✓	2			
POGR ✓	2			
PORI				
UTMA ✓	1			
NAFL				
POPR 5				
MYVE				
POPE 6				
POZO ✓	1			
CEDE				
POAM ✓	1			
SC SP. ✓	2			
LYSA				
NYTU				
SA SP. ✓	2			
ARVM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

STUMPS!

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 5/31/06

SITE INFORMATION

Plant Bed ID: 11A

Bed Size:

Substrate: 3

Marl? 0

High Organic? 0

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Waterbody ID:

Total # of Species

Canopy Abundance at Site: S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

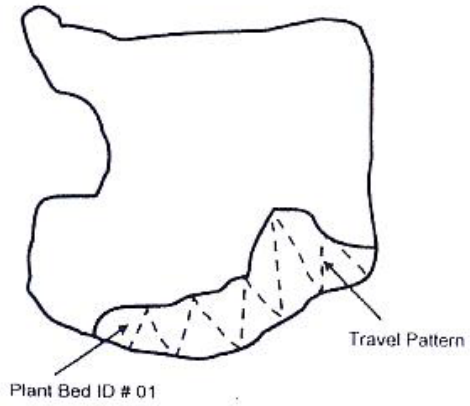
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
MYHE ✓ 2				
CHARA ✓	3			
POIL ✓	2			
POCR3				
MYSP 2				
POGR ✓	2			
PORI				
UTMA ✓	1			
NAFL				
POPR5				
MYVE				
POPE6 ✓	1			
POZO				
CEDE				
POAM				
POCHA ✓ SCSP. ✓	2			
LYSA				
NYTU				
SA SP.				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

SPARSE BED - MOSTLY CHARA

BREAK RELATIVELY SPARSE

- SAND GLADES - SOME GRAVEL/COBBLE

REMINDER INFORMATION

Substrate:
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2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
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S = Submersed

Canopy:
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Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 12
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~
Waterbody ID:
Total # of Species

Canopy Abundance at Site: S: N: F: E: 2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

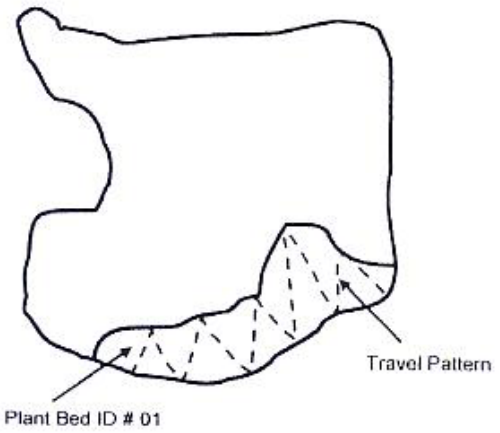
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	3			
POIL ✓	2			
POCR 3				
MYSP 2 ✓	2			
POGR ✓	2			
PORI ✓	2			
UTMA				
NAFL				
POPR 5 ✓	2			
MYVE				
POPE 6 ✓	1			
POZO ✓	2			
CEDE				
POAM				
SCSP. ✓	2			
LYSA				
NYTU				
SA SP. ✓	2			
ARVM				
NULU				
TYLA				
TYAN				

MYHE ✓ 2
POPO ✓ 2
WITH MYHE & ~~VAME~~ POZO
HIBISCUS ✓

Individual Plant Bed Survey



Comments:

INPT - 47 MYSP HOTSPOT - (AT SURFACE)
41° 42.61 N
85° 2.99 W
CHARA TO 27' OTHERS TO 14'

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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3 = 21-60%
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Abundance:
1 = < 2%
2 = 2-20%
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Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 12A

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

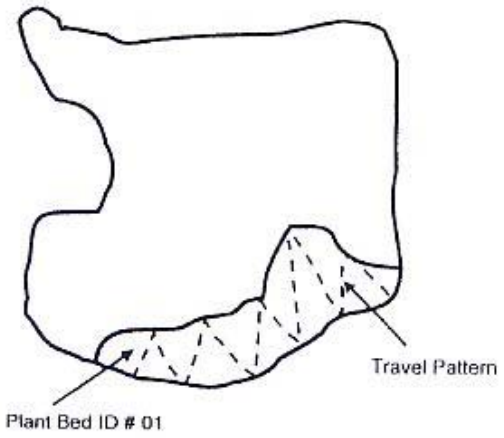
SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHARL	2			
POIL	2			
POCR3	1			
MYSP 2				
POGR	2			
PORI				
UTMA				
NAFL				
POPR5	2			
MYVE				
POPE6				
POZO				
CEDE				
POAM				
SCSP.				
LYSA				
NYTU				
SA SP.	2			
ARVM				
NULU				
TYLA				
TYAN				

MYHE 2

HIBISCUS 1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
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1 = Species suspe
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3 = Unknown

Voucher:
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1 = Taken, not varified
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Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION:	AQUATIC ENHANCEMENT & SURVEY, INC.	DATE:	5/30/06

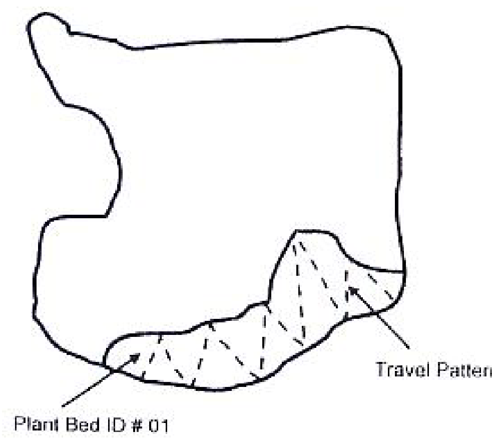
SITE INFORMATION		SITE COORDINATES
Plant Bed ID: 13	Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~	Center of the Bed
Bed Size:		Latitude:
Substrate: 2	Waterbody ID:	Longitude:
Marl? 0	Total # of Species	Max. Lakeward Extent of Bed
High Organic? 0	Canopy Abundance at Site	Latitude:
	S: 2 N: F: E: —	Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	2			
POIL				
POCR3 ✓	2			
MYSP2 ✓	2			
POGR ✓	2			
PORI				
UTMA				
NAFL				
POPR5 ✓	2			
MYVE				
POPE6				
POZO ✓	1			
CEDE				
POAM				
SC SP.				
LYSA				
NYTU				
~~SA SP ✓~~	~~1~~			
ARVM				
NULU				
TYLA				
TYAN				

Margin notes: MYHE ✓ 3; ELCA ✓ 2; HORNEDP ✓ 2; ~~HIBISCUS~~ ✓

Individual Plant Bed Survey



Comments:

MYHE HOTSPOT – UP NEAR DOCKS
41° 42.55N
85° 3.30W (MOST OF BED)

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
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2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
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1 = Species suspr
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not verified
2 = Taken, variflec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: 14

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 3

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

CanopyAbundance at Site

S: 1 N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

SPECIES INFORMATION

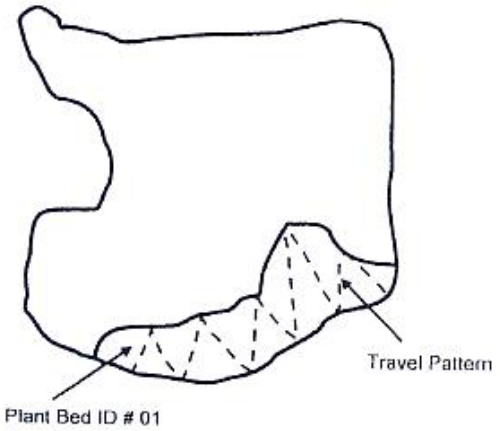
Species Code	Abundance	QE	Vchr.	Ref. ID
CH ?AR	1-2	~~2~~		
POIL	✓ 2			
POCR3				
MYSP2	✓ 2			
POGR	✓ 2			
PORI				
UTMA				
NAFL				
POPR5 ✓	2			
MYVE				
POPE6 ✓	2			
POZO				
CEDE				
POAM				
SCSP.				
LYSA				
NYTU				
SA SP. ✓	2			
ARUM				
NULU ✓	1			
TYLA ✓	2			
TYAN				

MYHE ✓ 3

NEEDLE PUSH ✓ 1

HYPERUS ✓ 1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
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QE Code:
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

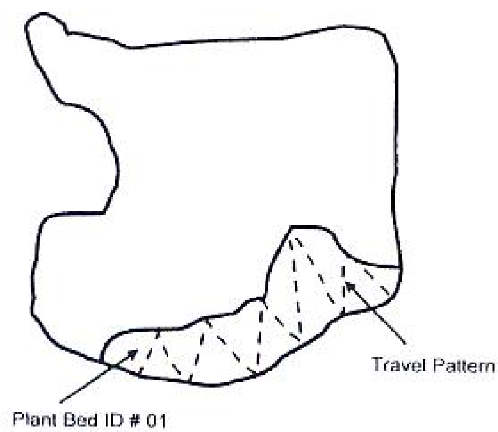
ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.		DATE: 5/30/06	
SITE INFORMATION		**SITE COORDINATES**	
Plant Bed ID: 14A	Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~	Center of the Bed	
Bed Size		Latitude:	
Substrate: 2 PEATY	Waterbody ID:	Longitude:	
Marl?	Total # of Species	Max. Lakeward Extent of Bed	
High Organic? 1	Canopy Abundance at Site	Latitude:	
	S: 2 N: F: E: 3	Longitude:	

SPECIES INFORMATION

MYHE ✓ 3
ELCA ✓ 2
FLOATING LEAF ✓ 1

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
POIL				
POCR 3 ✓	2			
MYSP 2 ✓	1			
POGR ✓	2			
PORI				
UTMA				
NAFL				
PUPR 5 ✓	1			
MYVE				
POPE 6				
POZO				
CEDE				
POAM				
SC SP.				
LYSA				
NYTU ✓	2			
SA SP. ✓	3			
ARVM				
NULU				
TYLA ✓	2			
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
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1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
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1 = Taken, not varified
2 = Taken, varifier

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06 5/31/06

SITE INFORMATION

Plant Bed ID: 15

Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

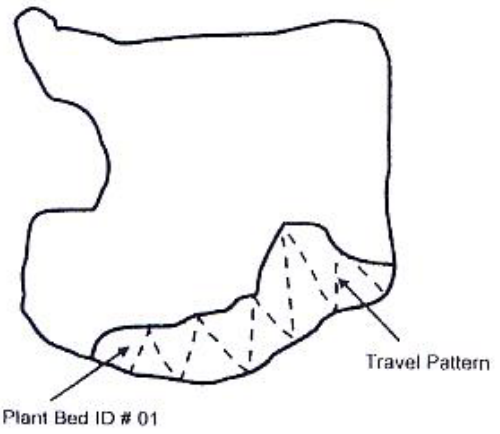
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR				
POIL ✓	2			
POCR 3 ✓	1			
MYSP 2 ✓	1			
POGR ✓	2			
PORI				
UTMA				
NAFL				
POPR 5 ✓	2			
MYVE				
POPE 6 ✓	~~2~~ 1			
POZO ✓	2			
CEDE				
POAM				
SCSP. ✓	1			
LYSA				
NYTU				
SA SP.				
ARVM				
NULU ✓	2			
TYLA ✓	2			
TYAN				

JAAM ✓ 1
MYHE ✓ 2
~~KAAR ✓~~
~~SA~~
FLOATING LEAF ✓ 1
POSP.? ✓ 1
VALLISNERIA 5
(POIL)
41° 42.58N
85° 3.86W
PORO

Individual Plant Bed Survey



Comments:

LITTLE WEEDLINE

SILT W. SAND

PO. SP. - APPROXIMATELY 5' ~~SAND W SILT~~

SMALLER PW - LIKE ~~AUSILLUS~~ BUT BIGGER

41° 42 54N AUSILLUS

85° 3.86W WITH POCR, POPR, POZ

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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Abundance:
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Voucher:
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/30/06

SITE INFORMATION

Plant Bed ID: ~~TU B9~~ 1
Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~
Bed Size
Substrate: 1
Waterbody ID:
Marl? 0
Total # of Species
High Organic? 1
Canopy Abundance at Site: S: 2 N: F: 2 E: 2

SITE COORDINATES

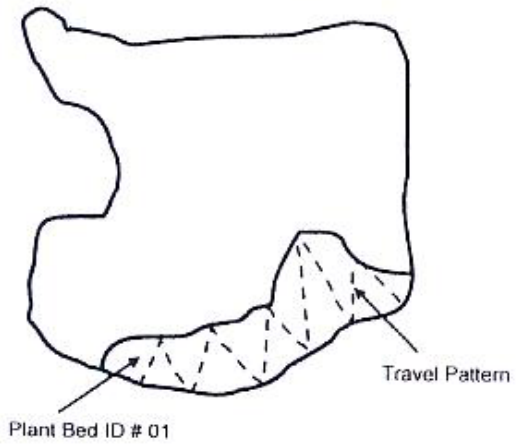
Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR				
POIL				
POCR 3 ✓	3			
MYSP 2 ✓	3			
POGR				
POR1				
UTMA				
NAFL				
POPR 5				
MYVE				
POPE 6				
POZO ✓	1			
CEDE ✓	3			
POAM				
SC SP. ✓	2			
LYSA				
NYTU ✓	2			
SA SP. ✓	2			
ARVM				
NULU ✓	3			
TYLA ✓	2			
TYAN				

ALGAE ✓ 3
MYHE ✓ 1
HORNED ✓ 2
'OPV ✓ 2
WATER STARGRASS ✓ 1
YEL FLG ✓ IRIS 2
YSA ✓ 2
ARROW SP. ✓ 2

Individual Plant Bed Survey



Comments:

- NARROW CHANNEL
- HIGH DISTURBANCE FROM BOATS
★ SHOULD BE REWARD/CuSO4 RESPONSIVE

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
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High Organic
1 = Present
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Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
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S = Submersed

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Reference ID:
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/30/06

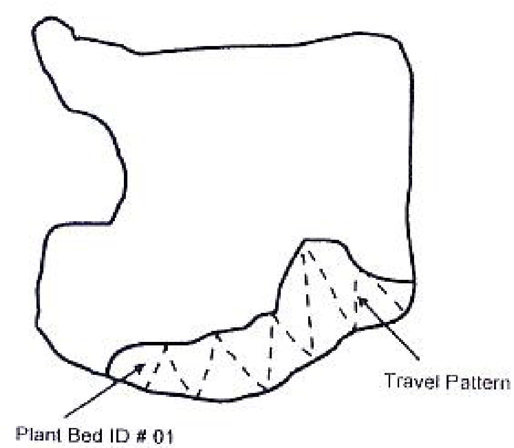
SITE INFORMATION		SITE COORDINATES
Plant Bed ID: CH 2	Waterbody Name: JIMMERSON LAKE ~~LAKE PLEASANT~~	Center of the Bed
Bed Size:		Latitude:
Substrate: 2	Waterbody ID:	Longitude:
Marl? 0	Total # of Species	Max. Lakeward Extent of Bed
High Organic? 1	Canopy Abundance at Site	Latitude:
	S: N: F: E: 2	Longitude:

ELCA ✓ 1
CEDE ✓ 1
MYHE ✓ 2
HORNEO ✓ 1
VAAM ✓ 1
POPU ✓ 1
~~NATE~~
FALSE LOOSE ✓ 1
MEADOW FLG IRIS ✓ 1
EMNA ✓ 2
LYSA ✓ 1
SWAMP LOOSE ✓ 1

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	2			
POIL				
POCR 3 ✓	2			
MYSP 2 ✓	3			
POGR				
PORI				
UTMA				
NAFL				
POPR 5				
MYVE				
POPE 6 ✓	2			
POZO				
CEDE				
POAM				
SC SP.				
LYSA				
NYTU ✓	2			
SA SP. ✓	2			
ARVM				
NULU ✓	2			
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

- BAD EWM @ END
- CHOKED WITH MYHE PROP CUTS
- TOO SHALLOW/TOO NARROW

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
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Abundance:
1 = < 2%
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QE Code:
0 = as defined
1 = Species suspe
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Voucher:
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Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Appendix B Tier I Data Sheets 8/06

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 1
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 5129

Canopy Abundance at Site: S: 1 N: F: E: 3

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

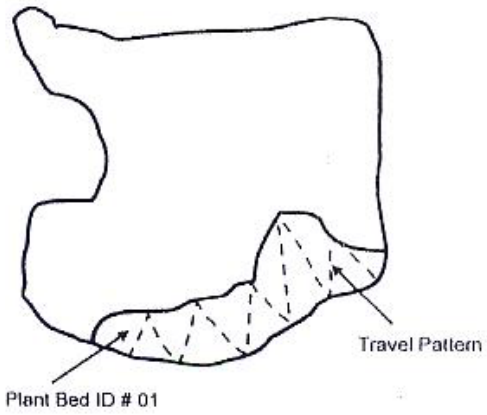
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	3			
POIL	✓	2			
POCR 3					
MYSP 2	✓	2			
POGR					
PORI	✓	2			
UTMA					
NAFL	✓	1			
POPR 5					
MYHE	✓	3			
POPE 6	✓	1			
POZO	✓	2			
CEOE					
POAM	✓	2			
SCSP.	✓	1			
LYSA	✓	1			
NYTU	✓	3			
SA SP.	✓	2			
ARVM					
NULU	✓	3			
TYLA					

VAAM ✓4
ELCA
POPU
PONO
STARGRASS ✓3
BUTTERCUP
~~HYBISCUS~~
SA SP.
FERNA INUNDATA ✓1
POFO
UNK

CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE ✓2
POCO ✓2
HYBISCUS
GIANT BUR REED ✓2
IRVI ✓1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 2
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 514 E9

CanopyAbundance at Site

S: N: F: E: 4

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

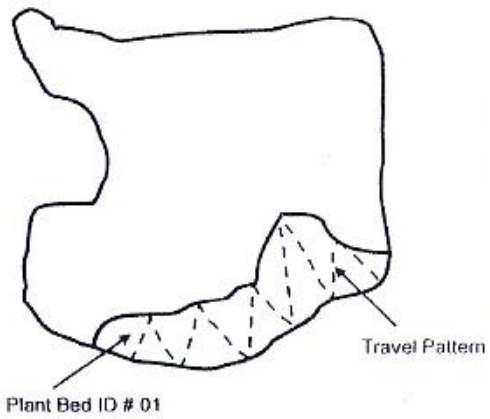
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	4			
POIL	✓	3			
POCR3	✓	1			
MYSP2	✓	1			
POGR					
PORI	✓	2			
UTMA	✓	1			
NAFL					
POPR5	✓	2			
MYHE	✓	2			
POPE6	✓	1			
POZO	✓	2			
CEOE					
POAM	✓	3			
SCSP.	✓	1			
LYSA	✓	1			
NYTU	✓	4			
SA SP.	✓	2			
ARVM					
NULU	✓	2			
TYLA	✓	2			

VRAM ✓3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HIBISCUS~~
SA SP.
FORMA
INUNDATA
POFO
UNK
NEEDLERUSH ✓1
IRVI ✓1

CA SP.
BUTTON BUSH
SWAMP ~~LOOSESTRIFE~~ ✓2
POCO ✓2
HIBISCUS
GIANT BUR REED ✓1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varified

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 3
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 31 ES

Canopy Abundance at Site: S: 1 N: F: E: 1

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

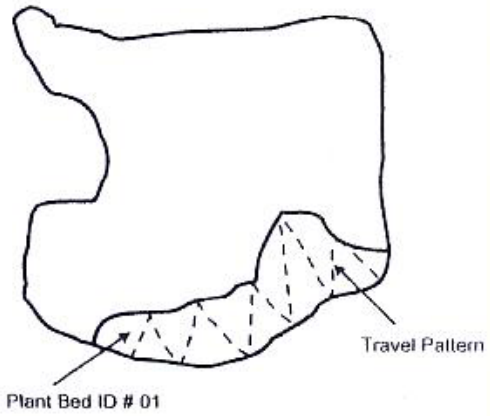
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	3			
POIL	✓	3			
POCR 3	✓	1			
MYSP 2	✓	1			
POGR					
PORI	✓	3			
UTMA	✓	1			
NAFL	✓	2			
PUFR 5	✓	1			
MYHE	✓	3			
POPE 6	✓	2			
POZO	✓	2			
CEDE					
POAM	✓	2			
SCSP.	✓	2			
LYSA	✓	2			
NYTU	✓	2			
SA SP.	✓	2			
ARVM					
NULU					
TYLA	✓	2			

VAAM ✓4
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
PUMA INUNDATA
POFO
UNK ALGA ✓1
IRVI ✓1
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE ✓1
POCO ✓2
HYBISCUS
GIANT BUR REED ✓1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varified

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/10/06

SITE INFORMATION

Plant Bed ID: 4
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 512 E9

Canopy Abundance at Site

S:	N:	F:	E:
1			2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

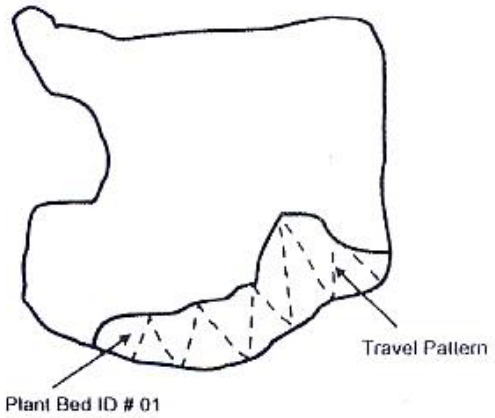
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CHTAR	✓	3			
POIL	✓	2			
POCR3					
MYSP2	✓	3			
POGR	✓	2			
PORI	✓	3			
UTMA					
NAFL	✓	2			
PUFR5	✓	1			
MYHE	✓	3			
POPE6	✓	1			
POZO	✓	3			
CEDE					
POAM	✓	3			
SCSP.	✓	1			
LYSA	✓	1			
NYTU	✓	3			
SA SP.	✓	2			
ARVM					
NULU	✓	3			
TYLA	✓	2			

VAAM ✓ 4
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HIBISCUS~~
SA SP. FORMA INUNDATA
POPO
UNK

CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO ✓
HYBISCUS
GIANT BUR REED ✓

Individual Plant Bed Survey



Comments: 14.4 ft Calm & cloudy

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

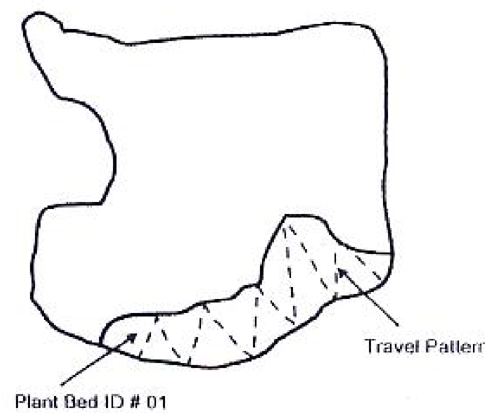
State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.		DATE: 8/9/06
SITE INFORMATION		**SITE COORDINATES**
Plant Bed ID: 5A	Waterbody Name: JIMMERSON LAKE	Center of the Bed
Bed Size:		Latitude:
Substrate: 4	Waterbody ID:	Longitude:
Marl? 0	Total # of Species 12 E1	Max. Lakeward Extent of Bed
High Organic? 0	Canopy Abundance at Site	Latitude:
	S: 1 N: F: E:	Longitude:

SPECIES INFORMATION

Margin note	Species Code		Abundance	QE	Vchr.	Ref. ID
VAAM ✓3	CH ? AR	✓	3			
ELCA	POIL	✓	2			
POPU	POCR 3					
PONO	MYSP 2	✓	2			
STARGRASS	POGR	✓	2			
BUTTERCUP	PORI					
~~HIBISCUS~~	UTMA	✓	1			
SA sp. PERMA INUNDATA	NAFL	✓	2			
POFO	POPR 5	✓	2			
UNK	MYHE	✓	3			
SA Semerse/floating ✓1	POPE 6	✓	2			
	POZO	✓	2			
	CEDE					
	POAM					
CA sp.	SC SP.					
BUTTON BUSH	LYSA	✓	1			
SWAMP LOOSESTRIFE	NYTU					
	SA SP.	✓				
POCO	AKVM					
HYBISCUS	NULU					
GIANT BURR REED	TYLA					

Individual Plant Bed Survey



Comments: UNK PO? Voucher #2 Weigh point 383

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not verified
2 = Taken, verifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/10/06

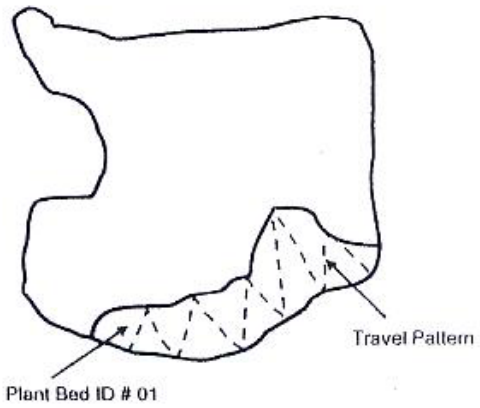
SITE INFORMATION		SITE COORDINATES
Plant Bed ID: 5B	Waterbody Name: JIMMERSON LAKE	Center of the Bed
Bed Size:		Latitude:
Substrate: 3	Waterbody ID:	Longitude:
Marl? 0	Total # of Species 5 9 E	Max. Lakeward Extent of Bed
High Organic? 0	Canopy Abundance at Site	Latitude:
	S: 2 N: F: E: 1	Longitude:

SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	2			
POIL	✓	3			
POCR 3					
MYSP 2	✓	2			
POGR	✓	2			
POR1					
UTMA					
NAFL	✓	1			
PUPR 5					
MYHE	✓	3			
POPE 6	✓	2			
POZO					
CEDE					
POAM					
SC SP.					
LYSA					
NYTU					
SA SP.					
ARVM					
NULU					
TYLA					

VAAM ✓3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
PUMA INUNDATA
POFO
UNK
PONAV 1,
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspt
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varified

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 6
Bed Size:
Substrate: 2
Marl? 1
High Organic? 1

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 5 14 2 11

CanopyAbundance at Site: S: 1 N: F: E: 2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

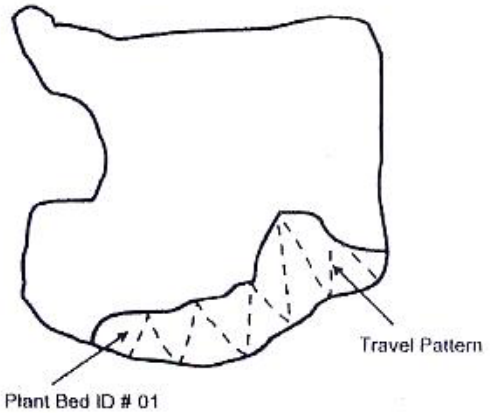
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	3			
POIL	✓	3			
POCR3					
MYSP 2	✓	2			
POGR	✓	2			
PORI					
UTMA	✓	1			
NAFL	✓	2			
POAR5	✓	2			
MYHE	✓	3			
POPE6					
POZO	✓	2			
CEDE	✓	1			
POAM	✓	2			
SC SP.	✓	2			
LYSA	✓	2			
NYTU	✓	3			
SA SP.	✓	2			
ARVM					
NULU	✓	2			
TYLA	✓	2			

VAAM ✓2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
HIBISCUS
SA SP.
POEMA INUNDATA
POFO
UNK
PO? ✓1
Needle rush ✓2

CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE ✓2
POCO ✓2
HYBISCUS ✓1
GRANT BURR REED ✓1
Water Stella ✓2

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 1
Waterbody Name: JIMMERSON LAKE
Bed Size:
Substrate: 2
Waterbody ID:
Marl? 0
Total # of Species S16 E5
High Organic? 1
Canopy Abundance at Site: S: 1 N: F: E: 3

SITE COORDINATES

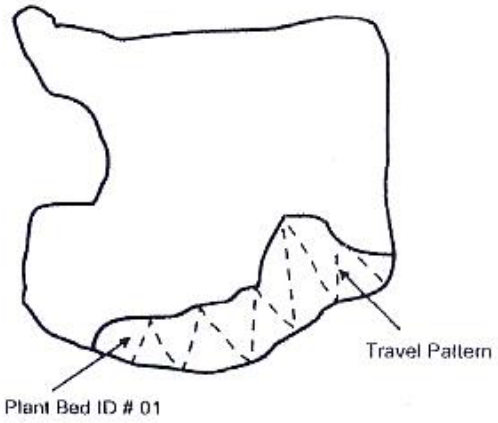
Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Voucher	Ref. ID
CH ? AR ✓	3			
POIL ✓	3			
POCR3				
MYSP2	2			
POGR ✓	2			
PORI				
UTMA ✓	3			
NAFL ✓	2			
POAM5				
MYHE ✓	3			
POPE6 ✓	1			
POZO ✓	2			
CEDE ✓	1			
POAM ✓	2			
SCSP.				
LYSA ✓	1			
NYTU				
SA SP. ✓	2			
ARVM				
NULU				
TYLA ✓	1			

needle rush ½2
VAAM ✓2
ELCA
POPU ✓1
PONO
STARGRASS
BUTTERCUP
HIBISCUS
SA SP.
FORMA INUNDATA
POFO
UNK
PO? ✓2
IRVI ✓1
PONA ½2
MY? 2
NYSP
I.D. P.V.N.C.
CA SP. ✓2
BUTTON BUSH
SWAMP LOOSESTRIFE ✓2
POCO
HIBISCUS
GIANT BUR REED ✓
water smart weed ✓1

Individual Plant Bed Survey



Comments: Weigh point 384
MY?
Voucher taken

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 8
Bed Size:
Substrate: 2
Marl? 1
High Organic? 1

Waterbody Name: JIMMERSON LAKE
Waterbody ID: 513 ES
Total # of Species
Canopy Abundance at Site: S: 1 N: F: E: 2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

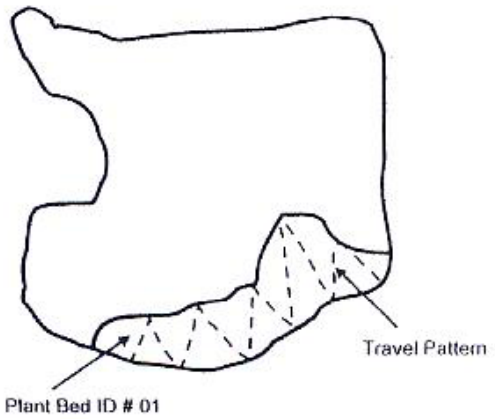
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	3			
POIL ✓	1			
POCR3				
MYSP2 ✓	2			
POGR ✓	2			
PORI				
UTMA				
NAFL ✓	2			
POPR5				
MYHE ✓	3			
POPE6				
POZO ✓	3			
CEDE ✓	1			
POAM				
SCSP. ✓	2			
LYSA ✓	2			
NYTU ✓	3			
SA SP. ✓	2			
ARVM				
NULU				
TYLA				

VAAM ✓2
ELCA
POPU ✓ 2
PONO
STARGRASS
BUTTERCUP
~~HABISCUS~~
SA SP. FORMA INUNDATA ✓1
POFO
UNK
POAM 2
Needle Rush ✓2
CA SP. ✓2
BUTTON BUSH
SWAMP LOOSESTRIFE ✓2
POCO ✓2
HYBISCUS ✓
GIANT BUR REED ✓1

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspt
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 9
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 56 E5

Canopy Abundance at Site

S:	N:	F:	E: 1

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

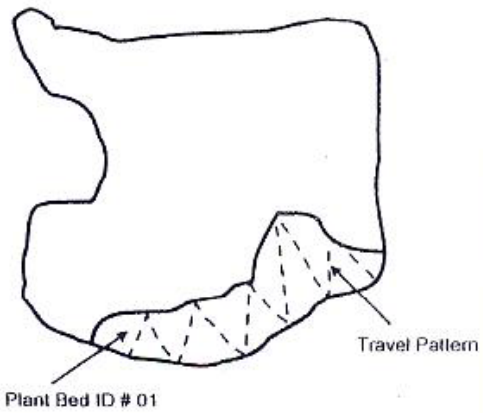
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ?AR	✓	3			
POIL	✓	3			
POCR3					
MYSP 2	✓	1			
POGR					
PORI					
UTMA	✓	1			
NAFL					
POPR 5					
MYHE	✓	3			
POPE6					
POZO					
CEDE					
POAM					
SC SP.	✓	1			
LYSA					
NYTU	✓	1			
SA SP.	✓	1			
ARVM					
NULU					
TYLA	✓	2			

VRAM ✓2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
PORA INUNDATA
POFO
UNK
CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS ✓
GIANT BUR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species susp
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 10
Bed Size:
Substrate: 3
Marl? 1
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 51 E6

Canopy Abundance at Site

S:	N:	F:	E:
			3

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

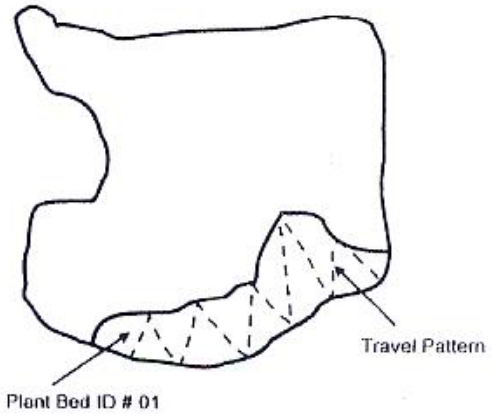
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	3			
POIL ✓	3			
POCR 3 ✓	1			
MYSP 2 ✓	1			
POGR				
PORI ✓	2			
UTMA				
NAFL ✓	1			
POPR 5				
MYHE ✓	3			
POPE 6				
POZO				
CEDE ✓	1			
POAM ✓	1			
SC SP.				
LYSA ✓	2			
NYTU ✓	3			
SA SP. ✓	1			
ARVM				
NULU ✓	2			
TYLA ✓	1			

VAAM ✓3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
HYBISCUS
SA SP.
POAM INUNDATA ✓1
POFO
UNK ELCA ✓1
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE ✓1
POCO
HYBISCUS
GIANT BURR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 01A
Waterbody Name: JIMMERSON LAKE
Bed Size:
Substrate: 3
Waterbody ID:
Marl? 1
Total # of Species 5|0 Σ 4
High Organic? 0
Canopy Abundance at Site: S: N: F: E: 1

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

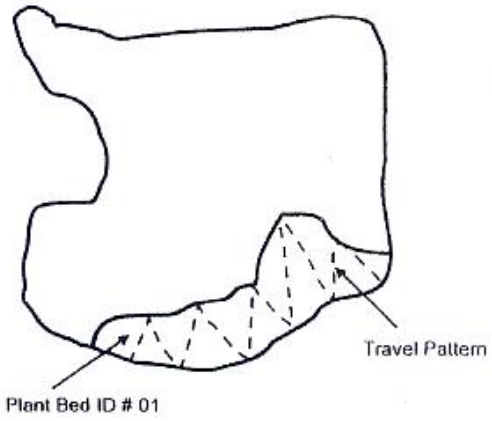
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH?AR	✓	3			
POIL	✓	3			
POCR3					
MYSP2	✓	1			
POGR	✓	1			
POR1	✓	2			
UTMA	✓				
NAFL	✓	1			
POPR5					
MYHE	✓	3			
POPE6	✓	1			
POZO	✓	1			
CEOE		1			
POAM					
SCSP.	✓	1			
LYSA					
NYTU	✓	2			
SA SP.					
AKUM					
NULU					
TYLA	✓	1			

VAAM ✓2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
HYBISCUS
SA SP.
FORMA INUNDATA
POFO
UNK

CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO ✓1
HYBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page __ of __

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 11
Bed Size:
Substrate: 2
Marl? 1
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species S13 E2

Canopy Abundance at Site

S:	N:	F:	E: 3

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

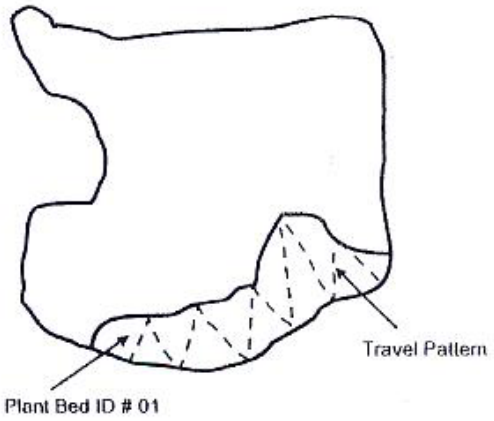
SPECIES INFORMATION

Species Code	Abundance	QE	Voucher	Ref. ID
CHAR ✓	3			
POIL ✓	3			
POCR3				
MYSP2				
POGR ✓	2			
PORI ✓	1			
UTMA ✓	1			
NAFL				
PUPR5				
MYHE ✓	3			
POPE6 ✓	1			
POZO ✓	2			
CEDE				
POAM				
SCSP.				
LYSA ✓	2			
NYTU ✓	3			
SA SP.				
ARVM				
NULU				
TYLA				

VAAM ✓2
ELCA
POPU ✓ 1
PONO
STARGRASS
BUTTERCUP
~~HIBISCUS~~
SA SP.
FORMA INUNDATA ✓1
POFO
UNK
Needle Rush ✓3
PONA 1
PORO 1

CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HIBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments: Voucher 1: PORE ~~O~~
N41° 42.29 min
W85° 2.97 min
MYHE, Needle Rush, POIL, NAFL, POZO

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 11A

Waterbody Name: JIMMERSON LAKE

Bed Size:

Substrate: 3

Waterbody ID:

Marl? 0

Total # of Species 55 E3

High Organic? 0

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

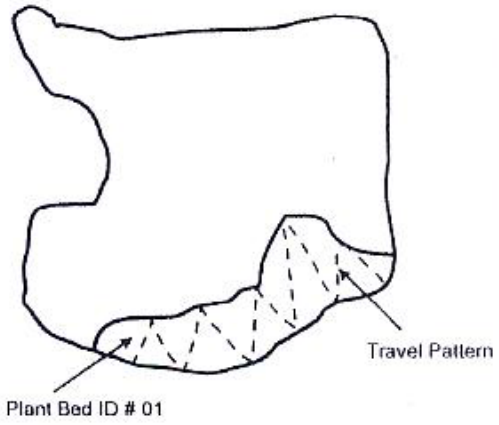
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ?AR	✓	2			
POIL	✓	1			
POCR3					
MYSP2					
POGR	✓	1			
PORI					
UTMA	✓	1			
NAFL					
POPR5					
MYHE					
POPE6					
POZO					
CEDE					
POAM					
SCSP.					
LYSA	✓	1			
NYTU					
SASP.					
ARVM					
NULU					
TYLA	✓	1			

VAAM ✓ 1
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
FORMA INUNDATA
POFO
UNK

CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO ✓ 1
HYBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments: Spars

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 12
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0
Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species S9 E3
Canopy Abundance at Site
S: N: F: E: 1

SITE COORDINATES

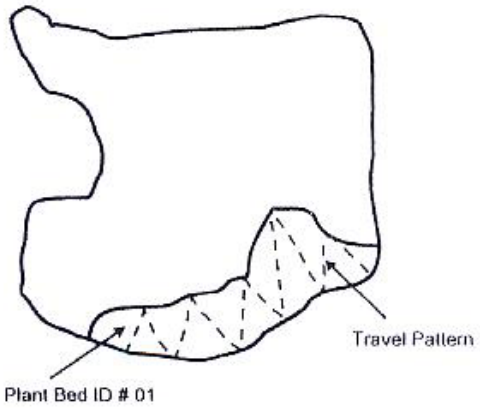
Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ?AR	✓	2			
POIL	✓	3			
POCR3					
MYSP 2	✓	2			
POGR	✓	2			
PORI					
UTMA					
NAFL	✓	1			
POPR5	✓	1			
MYHE	✓	3			
POPE6					
POZO	✓	1			
CEDE					
POAM					
SCSP.					
LYSA	✓	1			
NYTU	✓	1			
SA SP.	✓	2			
ARVM					
NULU					
TYLA					

VAAM ✓ 3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
POEMA INUNDATA
POFO
UNK
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS
GRANT BUR REED

Individual Plant Bed Survey



Comments: MYSP Hot Spot Still There.

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page __ of __

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 12A
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0
Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 57 E 3

CanopyAbundance at Site

S: N: F: E: 2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

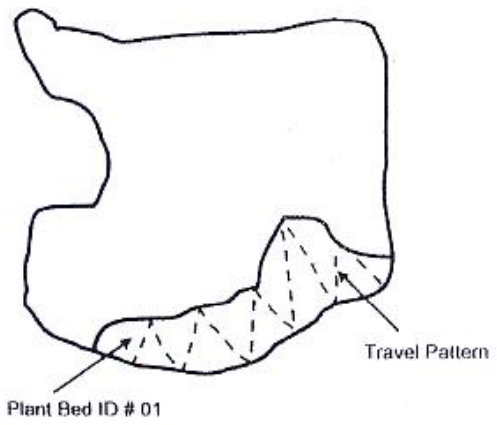
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ?AR ✓	3			
POIL ✓	3			
POCR3				
MYSP2 ✓	1			
POGR				
PORI ✓	1			
UTMA				
NAFL				
POPR5				
MYHE ✓	3			
POPE6 ✓	1			
POZO				
CEOE				
POAM				
SCSP.				
LYSA ✓	2			
NYTU ✓	2			
SA SP. ✓	2			
ARVM				
NULU				
TYLA				

VAAM ✓ 3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
PARMA INUNDATA
POFO
UNK
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS
GIANT BUPR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 13
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species 55 E2

Canopy Abundance at Site

S:	N:	F:	E:
			1

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

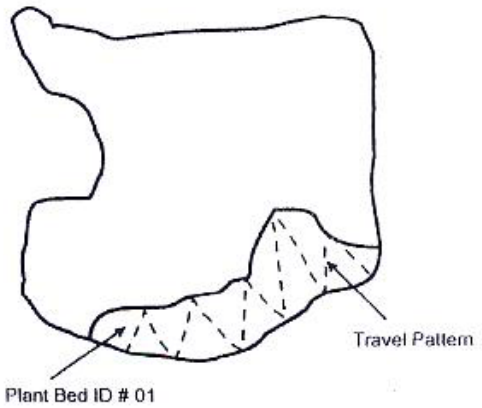
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	2			
POIL				
POCR 3				
MYSP 2 ✓	2			
POGR				
PORI				
UTMA				
NAFL				
POPR 5				
MYHE ✓	4			
POPE 6 ✓	1			
POZO				
CEDE				
POAM				
SC SP.				
LYSA				
NYTU ✓	1			
SA SP.				
ARVM				
NULU				
TYLA ✓	1			

VAAM ✓3
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP. FORMA INUNDATA
POFO
UNK 2
CA SP.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS
GRANT BUPR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page __ of __

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 14
Bed Size:
Substrate: 3
Marl? 0
High Organic? 0

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species S6 E3

Canopy Abundance at Site

S:	N:	F:	E: 2

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

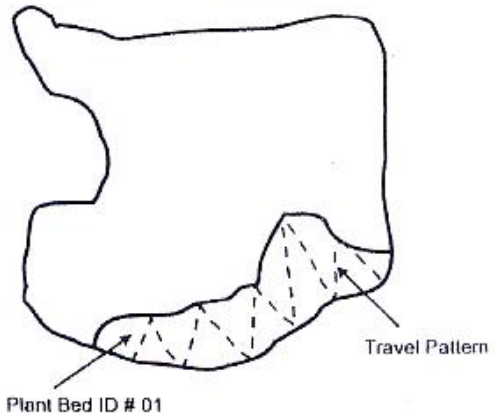
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	2			
POIL ✓	3			
POCR3				
MYSP2 ✓	1			
POGR				
PORI				
UTMA				
NAFL				
POPR5				
MYHE ✓	3			
POPE6				
POZO				
CEDE				
POAM				
SCSP.				
LYSA				
NYTU ✓	2			
SA SP.				
AKVM				
NULU				
TYLA ✓	1			

VAAM ✓2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HIBISCUS~~
SA SP.
FORMA INUNDATA
POFO
UNK Needle Rush ✓2
CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE ✓1
POCO
HIBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
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1 = Species suspt
2 = Genus suspected
3 = Unknown

Voucher:
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1 = Taken, not varified
2 = Taken, varified

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: 14A

Waterbody Name: JIMMERSON LAKE

Bed Size:

Substrate: 3

Waterbody ID:

Marl? 0

Total # of Species 58 E5

High Organic? 0

Canopy Abundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

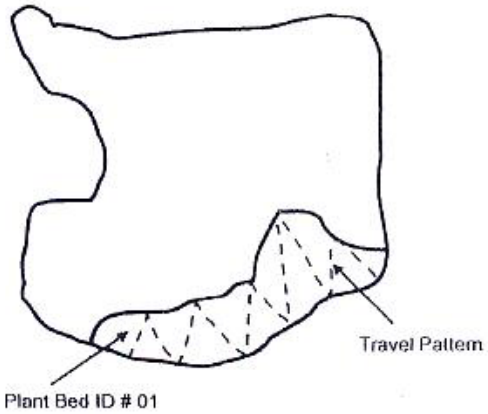
SPECIES INFORMATION

Species Code		Abundance	QE	Vchr.	Ref. ID
CH ? AR	✓	3			
POIL	✓	3			
POCR3					
MYSP 2					
POGR	✓	2			
PORI	✓				
UTMA					
NAFL	✓	1			
POAR5					
MYHE	✓	3			
POPE6					
POZO					
CEDE					
POAM					
SCSP.					
LYSA	✓	2			
NYTU	✓	3			
SA SP.	✓	3			
ARVM					
NULU					
TYLA	✓	2			

VAAM ✓ 2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
POAM
INUNDATA
POFO
UNK
Needle
Rush ✓ 3
PORO ✓ 1

CA sp.
Button Bush
SWAMP LOOSESTRIFE
POCO ✓ 2
HYBISCUS
GRANT RIVER PEPO

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page __ of __

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

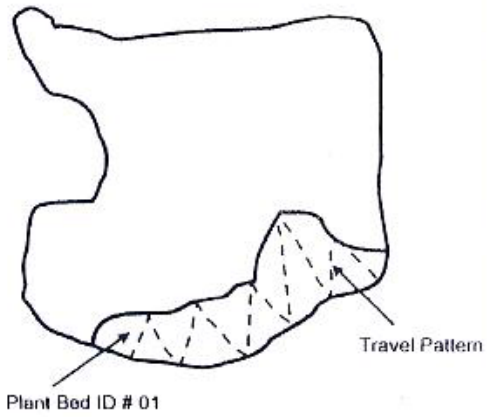
SITE INFORMATION		SITE COORDINATES
Plant Bed ID: 15	Waterbody Name: JIMMERSON LAKE	Center of the Bed
Bed Size:		Latitude:
Substrate: 3	Waterbody ID:	Longitude:
Marl? 0	Total # of Species S 13 E 4	Max. Lakeward Extent of Bed
High Organic? 0	CanopyAbundance at Site	Latitude:
	S: N: F: E:	Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ?AR ✓	3			
POIL ✓	3			
POCR3				
MYSP2 ✓	1			
POGR ✓	2			
PORI				
UTMA				
NAFL ✓	2			
POPR5 ✓	1			
MYHE ✓	2			
POPE6 ✓	1			
POZO ✓	2			
CEDE				
POAM				
SCSP. ✓	1			
LYSA				
NYTU ✓	1			
SA SP. ✓	1			
ARVM				
NULU				
TYLA ✓	1			

VRAM ✓2
ELCA
POPU ✓2
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
FORMA INUNDATA
POFO
UNK
PONAT 1
Needle Rush 3
CA sp.
BUTTON BUSH
SWAMP LOOSESTRIFE
POCO
HYBISCUS
GIANT BUR REED

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: CH 1
Bed Size:
Substrate: 2
Marl? 0
High Organic? 1

Waterbody Name: JIMMERSON LAKE
Waterbody ID:
Total # of Species S 10 E 11

Canopy Abundance at Site: S: 1 N: F: E: 3

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

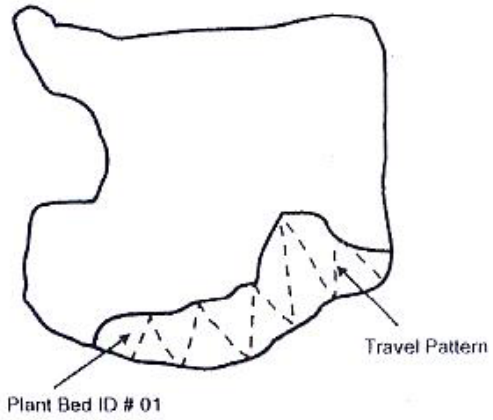
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR				
POIL				
POCR3 ✓	1			
MYSP2 ✓	2			
POGR ✓	2			
PORI				
UTMA				
NAFL ✓	1			
POPR5				
MYHE ✓	1			
POPE6 ✓	1			
POZO ✓	1			
CEDE ✓	3			
POAM				
SC SP. ✓	2			
LYSA ✓	2			
NYTU ✓	3			
SA SP. ✓	1			
ARVM				
NULU ✓	2			
TYLA ✓	3			

VAAM ✓2
ELCA
POPU
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
PDEMA INUNDATA
POFO
UNK ALGA ✓ 1
CA SP. ✓ 1
BUTTON BUSH
SWAMP LOOSESTRIFE ✓ 1
POCO ✓ 1
HYBISCUS
GIANT BUR REED ✓ 1
IRVI ✓ 1

Individual Plant Bed Survey



Comments: Condition gerally Okay.

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, verifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/9/06

SITE INFORMATION

Plant Bed ID: CH2
Waterbody Name: JIMMERSON LAKE
Bed Size:
Substrate: 2
Waterbody ID:
Marl? 1
Total # of Species 5 E
High Organic? 1
Canopy Abundance at Site: S: 1 N: 1 F: E: 2

SITE COORDINATES

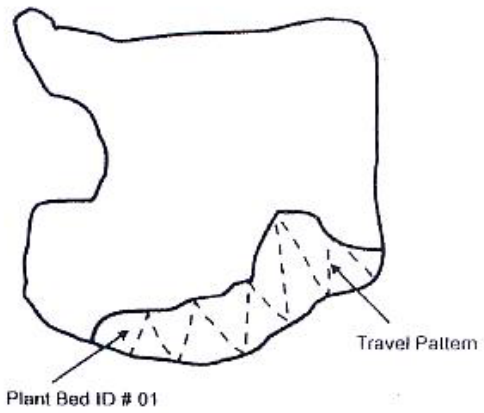
Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ? AR ✓	2			
POIL				
POCR3				
MYSP 2 ✓	2			
POGR				
PORI				
UTMA				
NAFL				
POPR 5				
MYHE ✓	2			
POPE6				
POZO				
CEDE ✓	2			
POAM				
SC SP. ✓	2			
LYSA ✓	2			
NYTU				
SA SP. ✓	2			
ARVM				
NULU				
TYLA ✓	1			

VAAM ✓2
ELCA
POPU ✓2
PONO
STARGRASS
BUTTERCUP
~~HYBISCUS~~
SA SP.
FORMA INUNDATA
POFO
UNK LEMNA ✓2
ALGA ✓2
DOIFIA ✓2
CA sp.
BUTTER BUSH
SWAMP LOOSESTRIFE ✓2
POCO
HYBISCUS
GIANT BUR REED
Mud Plantain 2

Individual Plant Bed Survey



Comments: General Condition good. Channel Silted

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
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Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
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Canopy:
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Reference ID:
Unique number or letter to denote specific location of a species, referenced on attached map

Appendix C Tier II Data Sheets 8/06

0-5 17 17 [illegible] 11-15 [illegible]
6-10 15 15 8/15/06 16-20 (9)
14 9
11-15 14 21-25 (5)
16-20 [illegible]
21-25-10

APPENDIX A

346 ACRES, CLASS I OLIGOTROPHIC

Submersed Aquatic Plant Survey Form

11

Page ___ of ___

WATER BODY NAME	JIMMERSON	SECCHI	
COUNTY	STEUBEN	MAX PLANT DEPTH	
DATE	8/7/06	WEATHER	
CREW LEADER	SB	COMMENTS	
RECORDER	DJG		

Rake score (1, 3, 5), observed only (9), algae present (p)

Use acronyms for species, V1, V2...for voucher codes

Note

Species Code

POTE STARGS	Site	WPT (~~Latitude~~) P	CONTOUR (~~Longitude~~)	Ft. Depth	All	OTAR	POIL	POGR	MYSP2	NAFL	VAAM	CEOE	UTMA	PUPR5	MYHE	POZO POAM ELCA
	1	385	0-5	5						1	3				5	1
	2	386	0-5	3		1	1				1				5	
	3	387	0-5	4.5							5				3	
	4	388	6-10	8							3				5	
	5	389	0-5	2							1		1		3	
	6	390	0-5	5		5	5				1				1	
1	7	391	0-5	3		5				1	3					
	8	392	0-5	5		5	5						1			
	9	393	0-5	4		5	3				1				1	
	10	394	0-5	4		5	3	1					5			
1	11	395	0-5	5		5	1				1					
	12	396	11-15	11									3		5	
	13	397	21-25	25		1						1				
	~~14~~	~~398~~	~~11-15~~	~~13~~											5	
	~~15~~	~~399~~	~~0-5~~	~~3.5~~		3	1						1		1	
	~~16~~	~~400~~	~~16-20~~	~~17.5~~		3										
	~~17~~	~~401~~	~~0-5~~	~~4~~						1	5				1	
	~~18~~	~~402~~	~~0-5~~	~~1~~											3	
	~~19~~	~~403~~	~~0-5~~	~~3~~		5									[illegible]	
	~~20~~	~~404~~	~~11-15~~	~~12~~											5	
	~~21~~	~~405~~	~~0-5~~	~~4~~		3	3						3		3	
	~~22~~	~~406~~	~~21-25~~	~~25~~		5							1			
	~~23~~	~~407~~	~~21-25~~	~~25~~		5										
	~~24~~	~~408~~	~~21-25~~	~~23~~												
	~~25~~	~~409~~	~~0-5~~	~~4~~		5		5		1	1					
	~~26~~	~~410~~	~~11-15~~	~~16~~		3					1	1	3		5	
	~~27~~	~~411~~	~~11-15~~	~~12~~		1					1				5	
	~~28~~	~~412~~	~~6-10~~	~~10~~							3				5	
	~~29~~	~~413~~	~~21-25~~	~~21~~							X					
	~~30~~	~~414~~	~~6-10~~	~~9~~						1	1				1	
	~~31~~	~~415~~	~~0-5~~	~~5~~												
	~~32~~	~~416~~	~~6-10~~	~~10~~		5									1	1

LOST LINK (sites 14–32)

Other plant species observed at lake

0-5ft contour 17

6-10ft contour 15

11-15ft contour 14

16-20ft contour 14

21-25ft contour 10

346 ACRES, CLASS I OLIGOTROPHIC

Submersed Aquatic Plant Survey Form

Page ___ of ___

WATER BODY NAME	JIMMERSON	SECCHI	16.8'
COUNTY	STEVENS	MAX PLANT DEPTH	
DATE	8/9/06	WEATHER	
CREW LEADER	SB	COMMENTS	
RECORDER	DJG		

Rake score (1, 3, 5), observed only (9), algae present (p)

Use acronyms for species, V1, V2...for voucher codes

Note

Site	WAT Latitude	CONTOUR Longitude	Depth	2M All	Species Code CHAR	POIL	POGR	MYSP2	NAFL	VAAM	CEOE	UTMA	POPRS	MYHE
33	419	16-20	17		3									
34	420	6-10	7		5									
35	421	6-10	6		5	1						1		
36	422	6-10	6		1					5		1		1
37	423	6-10	6		1		1			1		3		5
38	425	6-10	6.5		5					1				1
39	426	6-10	6		5							1		
40	427	6-10	7		5									
41	428	6-10	8		5	1								
42	446	6-10	6		5					1				5
43	447	6-10	6		1				5	5				
44	448	6-10	6								1			
45	449	16-20	18		3					1		1		
46	450	16-20	17.5		1									
47	451	16-20	17											1
48	452	11-15	12		3					1				
49	453	11-15	12									1		3
50	454	11-15	13											5
51	455	11-15	11				1			1				5
52	47°42.594N	35° 39.81W	15	11-15	1					1				3
53	.55	.26	13	11-15						5				1
54	.52	.23	4	0-5	3		3	1		1				
55	.47	.55	4	0-5		1								1
56	.25	.58	14	11-15						1				5
57	.15	.19	13	11-15										5
58	.11	.09	13	11-15										5
59	.11	.10	20	16-20	ELCA-1					1				5
60	.09	.15	23.5	21-25	5									
61	.14	.18	25	21-25										
62	.31	.16	21	21-25	3						1			1
63	.36	.10	23	21-25	3									
64	.40	.05	22	21-25										3

Other plant species observed at lake

0-5.9 21-25
6-10.9
11-15.9
16-20.9

346 ACRES, CLASS 1 OLIGOTROPHIC

APPENDIX A

Submersed Aquatic Plant Survey Form

11

Page of

WATER BODY NAME	JIMMERSON	SECCHI	
COUNTY	STEARNS	MAX PLANT DEPTH	
DATE	8/9/06	WEATHER	
CREW LEADER	SB	COMMENTS	
RECORDER	DJG		

Rake score (1, 3, 5), observed only (9), algae present (p)

Use acronyms for species, V1, V2...for voucher codes

Note

Site	~~Latitude~~ WPT	~~Longitude~~ CENTROID	Depth	All	Species Code: CHAR	POIL	PODR	MYSP2	NAFL	VAAM	CESE	UTMA	POPR5	MYHE
65	92.74 N	85°03.0 W	23	21-25	1						3			
66	.56	2.94	17	16-20	3									+
67	.60	3.02	18.5	16-20	3									1
68	.56	.09	18	16-20							3			5
69	.55	.18	20	16-20	1									
70	.60	.23	18	16-20	5			1			1			+
71	.56	.28	19	16-20	1				1					5
72	.31	3.67	16.5	16-20										
~~73~~	~~.26~~	~~.69~~	~~20~~	~~16-20~~	~~1~~									
74	.24	.75	19	16-20										
75	.10	.77	17	16-20	3							1		
76	.12	.69	16	16-20	1									
~~77~~	.08	3.90	4	0-5	1									3
78	.03	.91	17	16-20							5			
79	41.92	.89	5	0-5	5							1		
80	.95	.82	5.5	0-5	5							5		

Other plant species observed at lake

66.1°F

0-5.9 3 ||||+|||
6-10.9 15 ||||+||||+|||| 14-32 & 73
11-15.9 5 |||
16-20.9 7 ||||+|
21-25 5 ||

47

APPENDIX A

Submersed Aquatic Plant Survey Form

Page ____ of ____

WATER BODY NAME: JIMMERSON
COUNTY: STEVENS
DATE: 9/11/06
CREW LEADER: SB
RECORDER: SB

SECCHI: 16.4'
MAX PLANT DEPTH:
WEATHER: WINDY, CLOUDY, RAIN
COMMENTS:

Rake score (1-5), observed only (9), algae present (p)
Use acronyms for species, V1, V2...for voucher codes

Species Code

Site	Northing	Easting	Depth	Range All	CHAR	POLL	POAM	MYSP2	NAFL	VAAM	UTMA	POZO	MYHE	Note
14	41°43.51	85°04.91	10.5	5.1-5.9	5						1			
15	.45	-.81	4	0-5.9			1			3				
16	.40	.89	4.5	0-5.9				1	3	5				
17	.38	.50	5	0-5.9	1		1			1				
18	.29	.28	4	0-5.9	3	5				1	1			
19	.18	.21	4	0-5.9	1		1			1	5		1	
20	.03	.31	5.5	0-5.9	5						1			
21	42.98	.10	6.5	6-10.9	1		1	5		1	5		1	
22	.88	.17	16	16-20.9	5				1				1	
23	.92	.09	8	6-10.9	5	1				1	1			
24	.72	.20	19	16-20.9	1									
25	.69	.21	23	21-25										
26	.68	.14	9	6-10.9						5			3	
27	.74	.15	9	6-10.9	1	1	1				1		5	
28	.62	.03	7	6-10.9	1	5	1			1				
29	.49	.01	13	11-15.9	1				1	1			5	
30	39	3.89	18	16-20.9										
31	.40	.77	10	6-10.9			1		1	5	1		1	
32	.20	.63	21.5	21-25	5								5	
33	.11	.70	12.5	11-15.9	1									
34	.12	.79	7	6-10.9	1	5	1			1				
35	.03	.92	16	16-20.9	1									
36	41.93	.90	10.5	6-10.9	5									
37	.80	.99	4	0-5.9	5						1		3	
38	.71	4.00	10	6-10.9	1		1						5	1
39	.84	3.87	6	6-10.9	1									
40	42.10	3.84	2.5	0-5.9						5			L	
41	.51	.35	9	6-10.9	1				1	1	1		5	
42	.53	.31	16	16-20.9	3									
43	.54	.28	19.5	16-20.9										
44	.58	.25	15	11-15.9							1			
45	.61	.22	5	0-5.9			1			1			5	

Other plant species observed at lake

TIERI - CHANNEL - SEE ## ON MAP 5 SILT - ORGANIC - SHALLOW
SA SP 1 CEOE 3 MYHE 2 LEMNA 1 POCO 1 NYTU 2 EMERGENT CANOPY
CA SP 1 MYSP 1 FA 2 LYSA 2 CH 2 VAAM 1
QUITE A FEW ZEBRA MUSSELS ON PLANTS

0-5.9	5	
6-10.9	5	2
11-15.9	5	2
16-20.9	7	1
21-25	5	3

APPENDIX A

Submersed Aquatic Plant Survey Form

Page ____ of ____

WATER BODY NAME
COUNTY STEUBEN
DATE 9/11/06
CREW LEADER SB
RECORDER SB

SECCHI 16.4'
MAX PLANT DEPTH
WEATHER WINDY, CLOUDY, RAIN
COMMENTS

Rake score (1-5), observed only (9), algae present (p)
Use acronyms for species, V1, V2...for voucher codes

Note

Species Code

RAN: POPE	Site	Northing	Easting	Depth	RANGE ~~All~~	CHAR	SPNY	POIL	RM	POGR	PORI	MYSP2	NAPL	VAAM	LEMI	NAFL	UTMA	POZO	★ MYHE	POZO ELCA
	46	41°42.54	85°3.12	10	6-10.9						1			1					5	
	47	.57	06	25	21-25	5														
1	48	.61	.04	13	11-15.9									3					5	
	49	.61	2.95	11								5							5	
	50	.55	.94	16	16-20.9	1													1	
	51	.51	3.00	25	21-25	1													1	
	73	.39	.07	23	21-25	1													1	
	52	.44	.04	9.5	6-10.9	1				1			1	5			5		3	

Other plant species observed at lake

Appendix D 2007 Season IDNR Vegetation Permit Application

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to:
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name		Lake Assoc. Name
John Petry		Jimmerson Lake Association
715 Lane 275 Jimmerson Lake		Phone Number 260-833-4226
City and State: Angola, IN		ZIP Code 46703
Certified Applicator (if applicable): to be determined (bidding pending)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Jimmerson Lake	Angola	Steuben
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's See map	
Total acres to be controlled: up to 53.4	Proposed shoreline treatment length (ft) Up to 46133	Perpendicular distance from shoreline (ft) up to 50 ft
Maximum Depth of Treatment (ft): 14	Expected date(s) of treatment(s) 5/10/07, 7/10/07	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Navigate 2-4-D, Copper Sulfate, Reward, Hydrothol 191, Renovate 3, Aquathol K, Captain (as needed)

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance (August) % of Community
Vallisneria		35
Variable watermilfoil	X	25
Chara	X	12
Illinois p.w.	X	8
Eurasian watermilfoil	X	5
Common naiad	X	4
Variable p.w.	X	3
Flatstem p.w.	X	2
Sago p.w.	X	2
Largeleaf p.w.		1
Whitestem p.w.		1
Richardson's p.w.		1
Curlyleaf p.w.	X	1

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
☐ Whole Lake ☒ Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to:
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
John Petry	Jimmerson Lake Association	
715 Lane 275 Jimmerson Lake		Phone Number 260-833-4226
City and State: Angola, IN		ZIP Code 46703
Certified Applicator (if applicable): to be determined (bidding pending)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Jimmerson Lake	Angola	Steuben
Does water flow into a water supply		☐ Yes ☒ No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 2	LAT/LONG or UTM's See map	
Total acres to be controlled: up to 12.7	Proposed shoreline treatment length (ft) offshore trtmnt	Perpendicular distance from shoreline (ft): up to 700
Maximum Depth of Treatment (ft): 14	Expected date(s) of treatment(s): 5/10/07, 7/10/07	

Treatment method: ☒ Chemical ☐ Physical ☐ Biological Control ☐ Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Navigate 2-4-D

Plant survey method: ☒ Rake ☒ Visual ☐ Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance (August) % of Community
Vallisneria		20
Variable watermilfoil	X	40
Chara		12
Illinois p.w.		8
Eurasian watermilfoil	X	5
Common naiad		4
Variable p.w.		3
Flatstem p.w.		2
Sago p.w.		2
Largeleaf p.w.		1
Whitestem p.w.		1
Richardson's p.w.		1
Curlyleaf p.w.		1

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987

[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

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Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
John Petry	Jimmerson Lake Association	
715 Lane 275 Jimmerson Lake		Phone Number 260-833-4226
City and State: Angola, IN		ZIP Code 46703
Certified Applicator (if applicable): to be determined (bidding pending)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Jimmerson Lake	Angola	Steuben
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 3	LAT/LONG or UTM's See map	
Total acres to be controlled: up to 25	Proposed shoreline treatment length (ft) see map	Perpendicular distance from shoreline (ft) see map
Maximum Depth of Treatment (ft): 16	Expected date(s) of treatment(s) 5/10/07, 7/10/07	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Navigate 2-4-D, Renovate 3, Aquathol K liquid, Hydrothol 191, Captain, Copper sulfate

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance (August) % of Community
Vallisneria		20
Variable watermilfoil		40
Chara		12
Illinois p.w.		8
Eurasian watermilfoil	X	5
Common naiad		4
Variable p.w.		3
Flatstem p.w.		2
Sago p.w.		2
Largeleaf p.w.		1
Whitestem p.w.		1
Richardson's p.w.		1
Curlyleaf p.w.	X	1

Treatment Area # 4	LAT/LONG or UTM's see map	
Total acres to be controlled up to 31.6	Proposed shoreline treatment length (ft) 46133	Perpendicular distance from shoreline (ft) up to 30 ft
Maximum Depth of Treatment (ft) 5	Expected date(s) of treatment(s) 7/15/2007	

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Nautique

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Vallisneria	X	35
Variable watermilfoil		25
Chara		12
Illinois p.w.		8
Eurasian watermilfoil		5
Common naiad		4
Variable p.w.		3
Flatstem p.w.		2
Sago p.w.		2
Largeleaf p.w.		1
Whitestem p.w.		1
Richardson's p.w.		1
Curlyleaf p.w.		1

INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

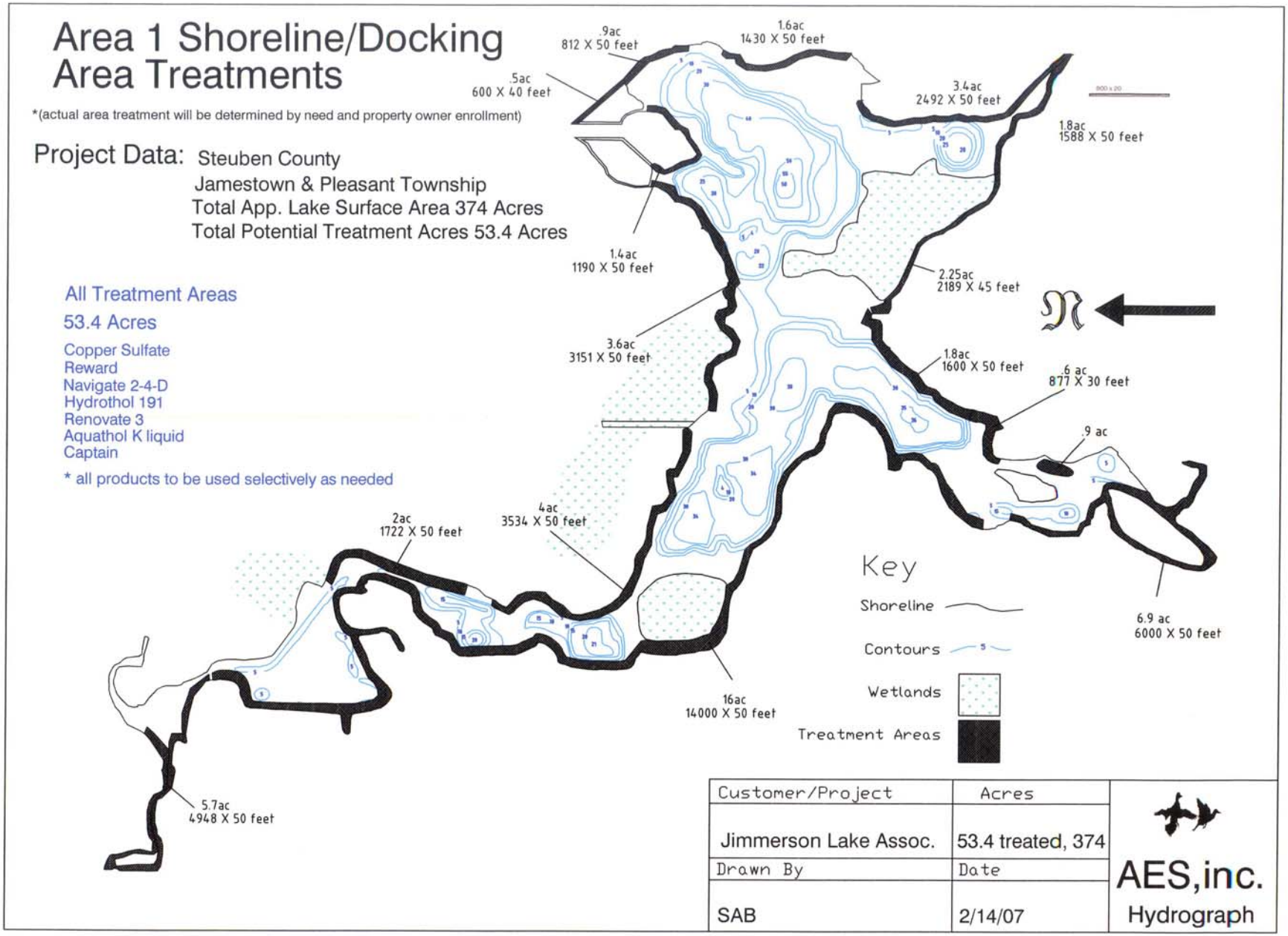
Applicant Signature	Date
Certified Applicant's Signature N/A (bidding pending)	Date

FOR OFFICE ONLY

[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

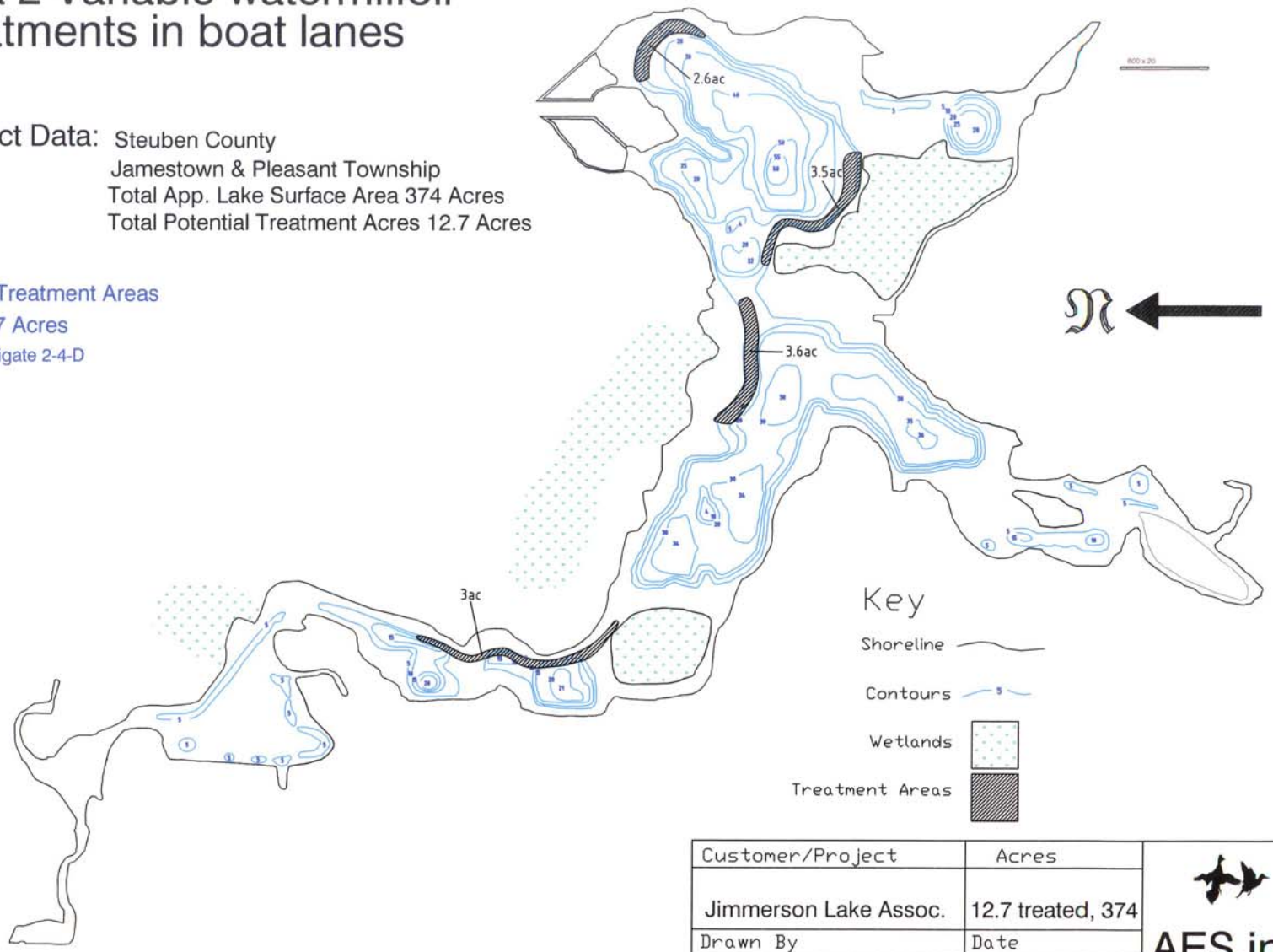
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204


Area 1 Shoreline/Docking Area Treatments
*(actual area treatment will be determined by need and property owner enrollment)
Project Data: Steuben County
Jamestown & Pleasant Township
Total App. Lake Surface Area 374 Acres
Total Potential Treatment Acres 53.4 Acres
All Treatment Areas
53.4 Acres
Copper Sulfate
Reward
Navigate 2-4-D
Hydrothol 191
Renovate 3
Aquathol K liquid
Captain
* all products to be used selectively as needed
.9ac 812 X 50 feet
1.6ac 1430 X 50 feet
.5ac 600 X 40 feet
3.4ac 2492 X 50 feet
1.8ac 1588 X 50 feet
1.4ac 1190 X 50 feet
2.25ac 2189 X 45 feet
3.6ac 3151 X 50 feet
1.8ac 1600 X 50 feet
.6 ac 877 X 30 feet
.9 ac
2ac 1722 X 50 feet
4ac 3534 X 50 feet
6.9 ac 6000 X 50 feet
16ac 14000 X 50 feet
5.7ac 4948 X 50 feet
Key
Shoreline
Contours
Wetlands
Treatment Areas
Customer/Project
Acres
Jimmerson Lake Assoc.
53.4 treated, 374
Drawn By
Date
SAB
2/14/07
AES,inc.
Hydrograph

Area 2 Variable watermilfoil Treatments in boat lanes

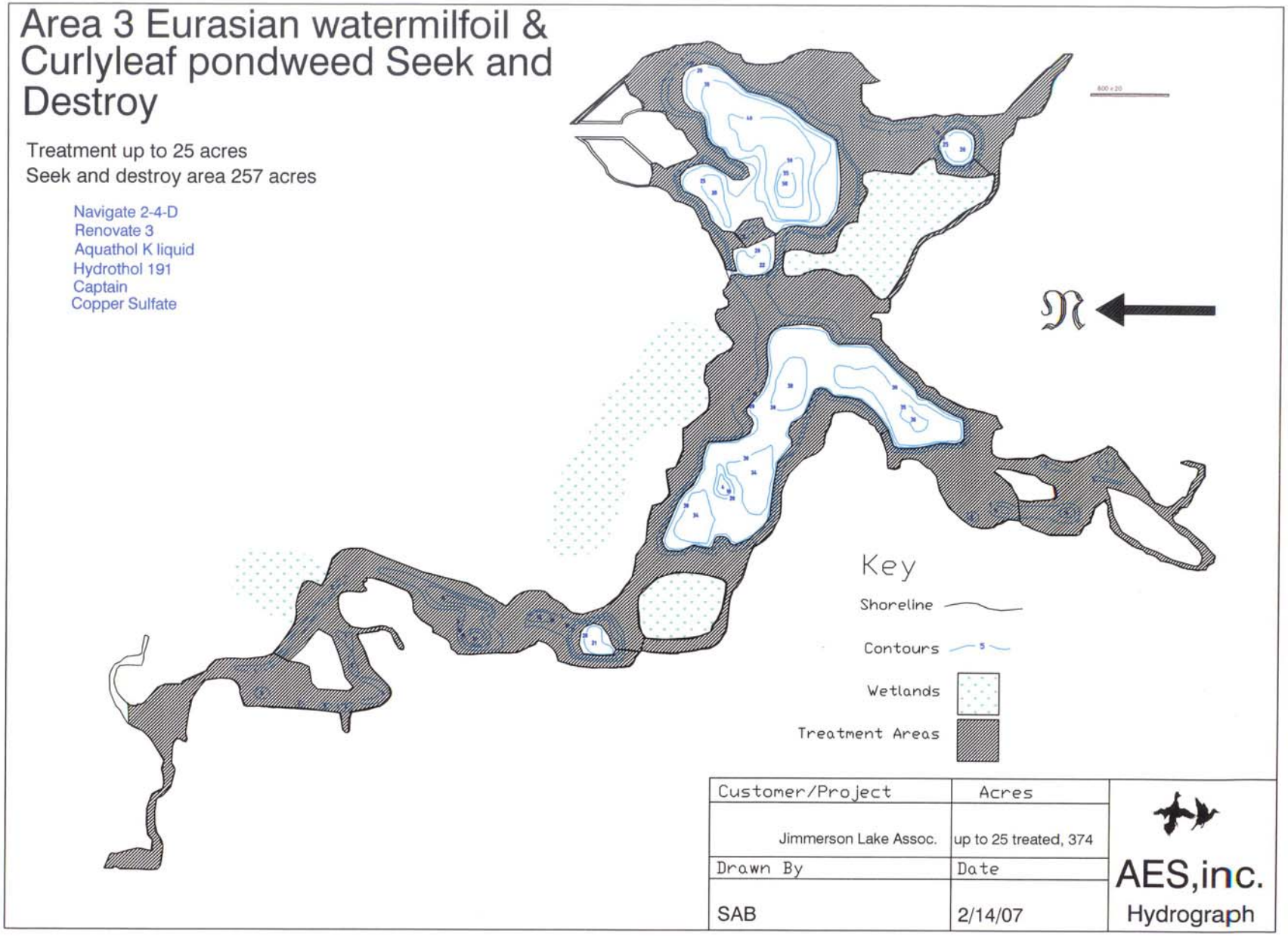
Project Data: Steuben County
Jamestown & Pleasant Township
Total App. Lake Surface Area 374 Acres
Total Potential Treatment Acres 12.7 Acres

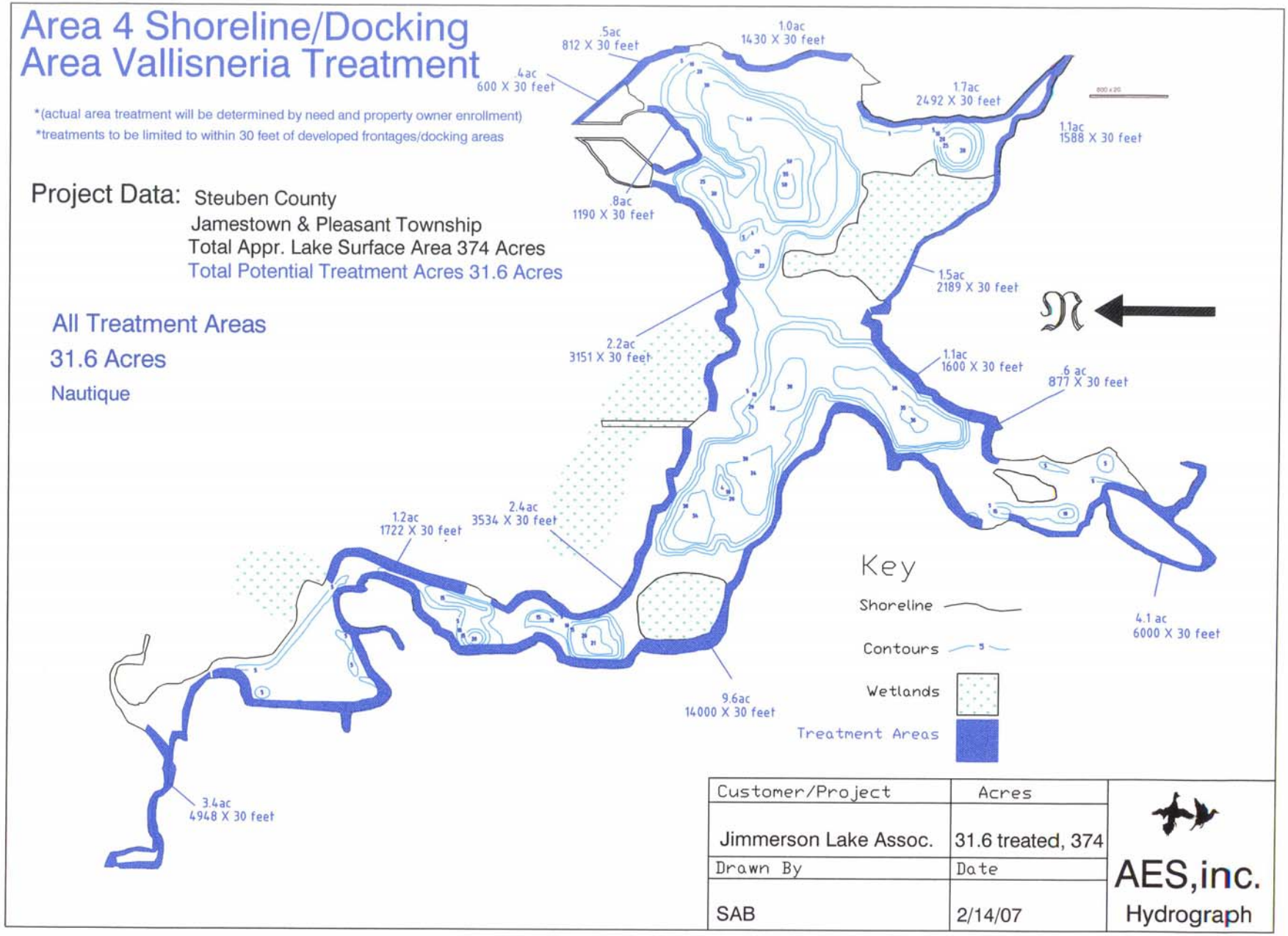
All Treatment Areas
12.7 Acres
Navigate 2-4-D



Customer/Project	Acres
Jimmerson Lake Assoc.	12.7 treated, 374
Drawn By	Date
SAB	2/14/07

AES,inc.
Hydrograph


Area 3 Eurasian watermilfoil & Curlyleaf pondweed Seek and Destroy
Treatment up to 25 acres
Seek and destroy area 257 acres
Navigate 2-4-D
Renovate 3
Aquathol K liquid
Hydrothol 191
Captain
Copper Sulfate
N
Key
Shoreline
Contours
Wetlands
Treatment Areas
Customer/Project
Acres
Jimmerson Lake Assoc.
up to 25 treated, 374
Drawn By
Date
SAB
2/14/07
AES,inc.
Hydrograph


Area 4 Shoreline/Docking
Area Vallisneria Treatment
*(actual area treatment will be determined by need and property owner enrollment)
*treatments to be limited to within 30 feet of developed frontages/docking areas
Project Data: Steuben County
Jamestown & Pleasant Township
Total Appr. Lake Surface Area 374 Acres
Total Potential Treatment Acres 31.6 Acres
All Treatment Areas
31.6 Acres
Nautique
.5ac
812 X 30 feet
1.0ac
1430 X 30 feet
.4ac
600 X 30 feet
1.7ac
2492 X 30 feet
1.1ac
1588 X 30 feet
.8ac
1190 X 30 feet
1.5ac
2189 X 30 feet
2.2ac
3151 X 30 feet
1.1ac
1600 X 30 feet
.6 ac
877 X 30 feet
1.2ac
1722 X 30 feet
2.4ac
3534 X 30 feet
4.1 ac
6000 X 30 feet
9.6ac
14000 X 30 feet
3.4ac
4948 X 30 feet
Key
Shoreline
Contours
Wetlands
Treatment Areas
Customer/Project
Acres
Jimmerson Lake Assoc.
31.6 treated, 374
Drawn By
Date
SAB
2/14/07
AES,inc.
Hydrograph

Appendix E Additional Resources

Calendar of lake management, conferences, classes, and workshops

Jimmerson Lake residents can attend the following events to learn more about lake management and converse with other lake associations and lake management professionals regarding treatment programs

2007
March 30th and 31st, Indiana Lakes Management Society conference. Lake Monroe, Bloomington, Indiana. More information is available at www.indianalakes.org or by calling 260-665-8226

October 2006, Several local workshops offered by the Indiana Lakes Management Society, dates to be announced. More information is available at www.indianalakes.org or by calling 260-665-8226

Sources of local, state, and federal funding and information

Funding assistance for watershed wetland and grassland restoration is available from:

Ducks Unlimited
Great Lakes/Atlantic Regional Office
331 Metty Drive, Suite #4
Ann Arbor, MI 48103
734-623-2000

Pheasants Forever, Northeast Indiana Chapter
Habitat Officer, Dave Hurley
1003 County Road 8
Corunna, IN 46730

Other help for watershed improvements can be obtained from:

Indiana Department of Natural Resources
Division of Fish and Wildlife Room W265
402 W. Washington Street
Indianapolis, IN 46204-2739
317-233-5468

USDA Natural Resources Conservation Service
1220 N 200W
Angola, IN 46703

Wood-Land-Lakes RC&D

Peachtree Plaza 200
1220 N 200 W -Ste J
Angola, IN 46703
260-665-3211, Ext. 5